Northern California's Computer Magazine Nov. 23, 1992 • #102 FREE

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Meditations in Big Blue

Kaleida CEO Nat Goldhaber on IBM/Apple's Multimedia Venture:

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Interview by John Perry Barlow

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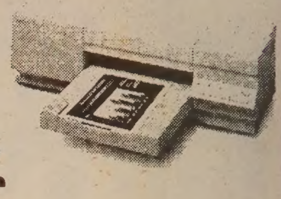

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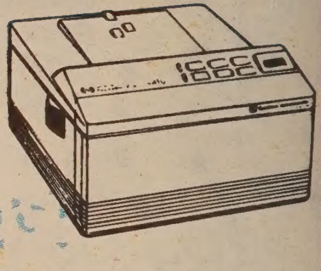

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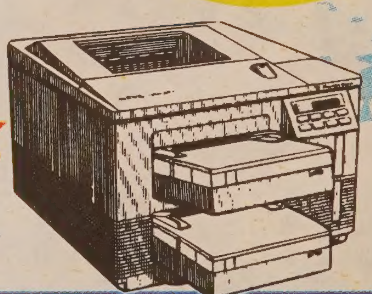

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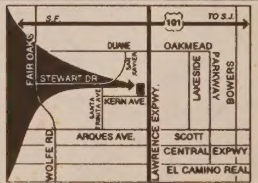
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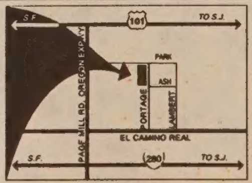
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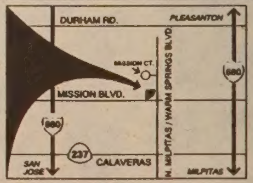
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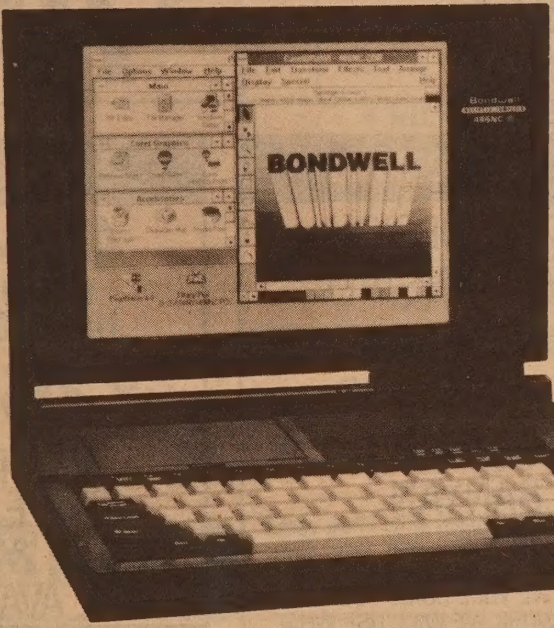

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A NOTE FROM THE EDITORS

We're admittedly proud of the interviews we've been able to bring you over the last year, and we're wrapping up 1992 on a pretty cheerful note.

Sometime last summer Barlow (ex-cattle rancher, Grateful Dead lyricist, and co-founder of the Electronic Frontier Foundation) announced that he was about to take a trip to Japan with Kaleida CEO Nat Goldhaber. "Oh good," I said, with fond memories of the interview we did with Goldhaber back in 1987. "As long as you're sitting on the plane all that time, bring a tape recorder and do an interview..."

By the time editorial cold feet caught up with me (after all, Kaleida's a long way from having any products, and what would Nat be able to talk about this early...), interviewer and interviewee were having a fine old time with the whole notion.

The interview didn't actually take place on the plane, as it turned out. It wound up happening in the treehouse attached to Nat's kids' swingset, which may have something to do with its utter lack of solemnity.

We hope you have fun reading it, too, and come away with some new ideas.

—ME

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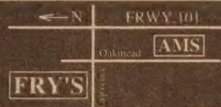

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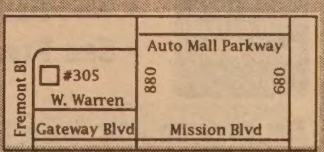

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CONTRIBUTORS

Lenny Bailes is a teacher and consultant based in San Francisco. His book, *Memory Management and Multitasking Beyond 640K,* has just been published by Windcrest/McGraw-Hill.

John Perry Barlow is a cofounder of the Electronic Frontier Foundation and a contributing editor to *MicroTimes, NeXTworld,* and *Communications of the ACM.*

Jennifer Robin Cherniss is a free-lance writer living in Berkeley.

Anna Couey is a telecommunications writer and artist.

Kathleen Creighton is a longtime observer of public online services. She can be reached at *casey@well.sf.ca.us.*

John C. Dvorak is a widely syndicated columnist, book author, and talk show host. He often lets his readers do the talking.

Mitsu Hadeishi is the founder of Open Mind, a San Diego-based software company.

Paul Hoffman is an industry analyst who's been writing about microcomputer technology for ten years, and is the author of several books on computer-related topics.

Ed Kahn is a writer and consultant based in the San Fernando Valley.

Contributing editor **Matthew Leeds** works at Brøderbund Software and writes about graphics and multimedia.

Game wizard **Mike Markowitz** works in computer support at a major Southern California university.

Contributing editor **Brock N. Meeks** is based in Washington, DC, where he writes about telecommunications issues for *Communications Daily.*

David Morgenstern is a BMUG volunteer and works in the library at San Francisco State.

Robert Moskowitz is a business consultant based in Woodland Hills, CA. He writes frequently on productivity, office automation, and technology.

Doug Nakakihara is a CPA based in Simi Valley, and also a committed Amiga zealot.

Tony Reveaux is the editor of *Computer Publicity News,* a contributing editor for *Artweek,* and the author of the "MediaScan" column in *Film/Tape World.*

David Simon, CPA is in tax and accounting practice in Oakland.

Marshall Smith is a San Francisco-based writer whose work has appeared in a number of Bay Area publications including the *San Francisco Chronicle* and the *Whole Earth Review.*

Eric Theise is on the faculty at the Naval Postgraduate School in Monterey, where he's engaged in teaching and research on subjects related to wide area networking and human/computer interaction.

Birrell Walsh works at KQED and writes about specialized PC-related subjects.

Wayne A. Yacco lives in Burbank. His writing on computer-related subjects appears in many publications.

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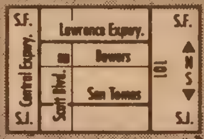

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ASSISTANT EDITOR Michael Robin
NEWS EDITOR Paul Hoffman
ART DIRECTOR Lisa Lusk
SENIOR DESIGNER Monika Lukenbill Loar
CONTRIBUTING EDITORS Lenny Bailes, John Perry Barlow, John C. Dvorak, Bennett Falk, Mitsu Hadeishi, Ed Kahn, Matthew Leeds, Mike Markowitz, Brock Meeks, David Morgenstern, Douglas J. Nakakihara, Tony Reveaux, Birrell Walsh, Jim Warren, Wayne A. Yacco
CONTRIBUTING WRITERS Mikael Blaisdell, Anna Couey, Kathleen Creighton, Adam Gaffin, Rich Grace, Peter John Harrison, Fred Lieberman, Woody Liswood, Robert Moskowitz
CONTRIBUTING PHOTOGRAPHERS Jay Blakesberg, Michael Jay, Susana Millman, Ann Summa, Paul Winternitz

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Letters

NANOTECHNOLOGY: THE DARK SIDE

I just got done reading the *MicroTimes* article on nanotechnology [Issue #101] and it was fascinating and even scary. The thought of building machines from the molecules up rather than whittling a chunk of material down to the desired shape struck me as "revolutionary" (in the sense of a dramatic departure from previous methods and thought patterns). At the same time I was struck by the lack of concern expressed in any of the articles about the potential of abuse. There was one short reference to this technology being hidden in government labs, and the person interviewed did not really give a decent answer to that.

What concerns me is really the uses to which this new technology will be put. Of course it would be neat to have devices like the Apple Newton with the capability of a Cray supercomputer. I can think of all kinds of possibilities. But I can also think of what a scientific community which, on the whole, does not really ponder the social and political impact of its inventions may end up developing.

I really do think that the stuff you guys cover is altogether more interesting than much of what appears in *PC Magazine* or the equivalents.

Michael Niemann
Department of Political Science
Trinity College
Hartford, CT

We'd like to make it clear that the purpose of our recent nanotechnology articles was not to give a comprehensive overview of the field and its dangers and benefits, but to provide a very basic introduction. With that in mind, we tried to avoid both the Pollyanna and the doomsday approaches, and point readers to resources for further study.

Those with a particular interest in the social (rather than the technical) aspects of nanotechnology will probably find the book Unbounding the Future *of particular interest, as well as various publications of the Foresight Institute, which is dedicated to increasing awareness and discussion of the impact of this technology. Also of interest are the biweekly meetings of Ted Kaehler's "Assembler Multitude," specifically dedicated to exploring the social impact of this technology. (For more specific information on these resources, see the original article.)*

Generally speaking, we're in agreement with Drexler's thesis that since nanotechnology is already upon us and being developed in varying degrees of secrecy, it is of the utmost importance to increase general awareness of its nature and impact. Since this genie is clearly not going back in the bottle, the most intelligent approach to dealing with it is knowledge rather than denial, and to find ways of using it that we can all live with and benefit from.

—ME

DIGITAL TELEPHONY

Enjoyed the latest edition of *MicroTimes.* While the cover story on nanotechnology was certainly interesting, the News & Views feature on the FCC digital telephony bill stole the show.

The feature went way beyond just informing—it really helped to flesh out the issues surrounding the bill. The inclusion of the text of the bill and the views from both sides was spectacular.

Now if only you could do more of that.

Bravo to you and the Electronic Frontier Foundation. Hope you work together more often.

Todd Woodward
from America Online

ACCESS TO INFO

The last two articles by Jim Warren regarding access to public records were excellent. Mr. Warren has given me permission to make copies of these articles available to every grand jury in the State of California.

continued on page 38

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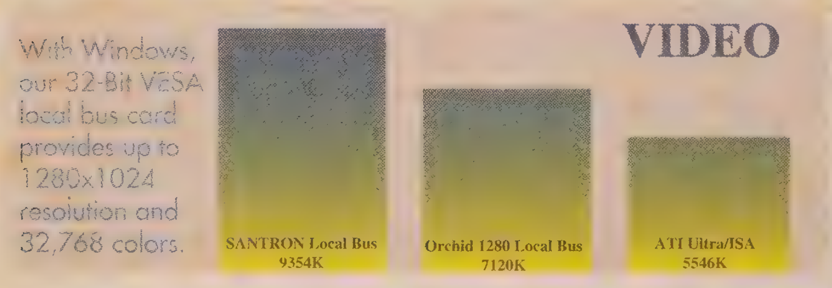

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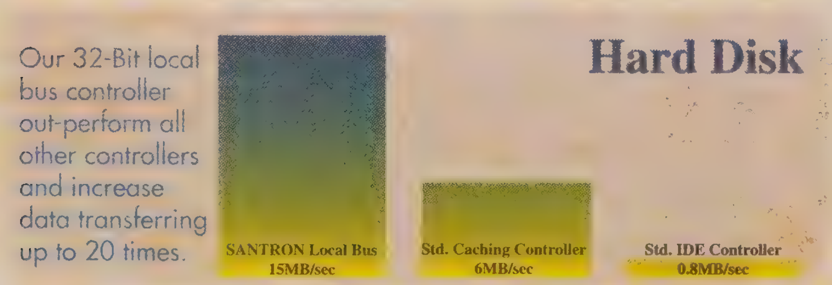

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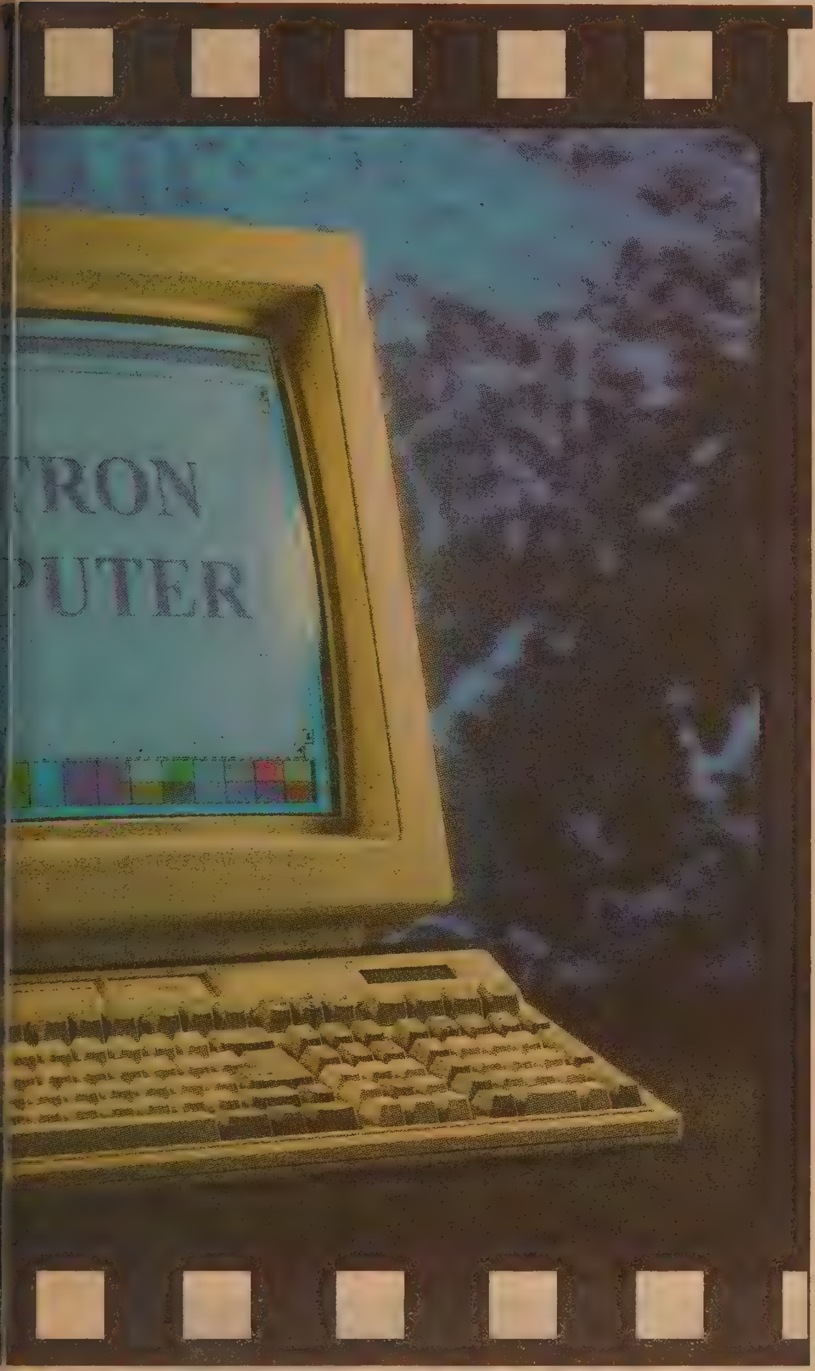

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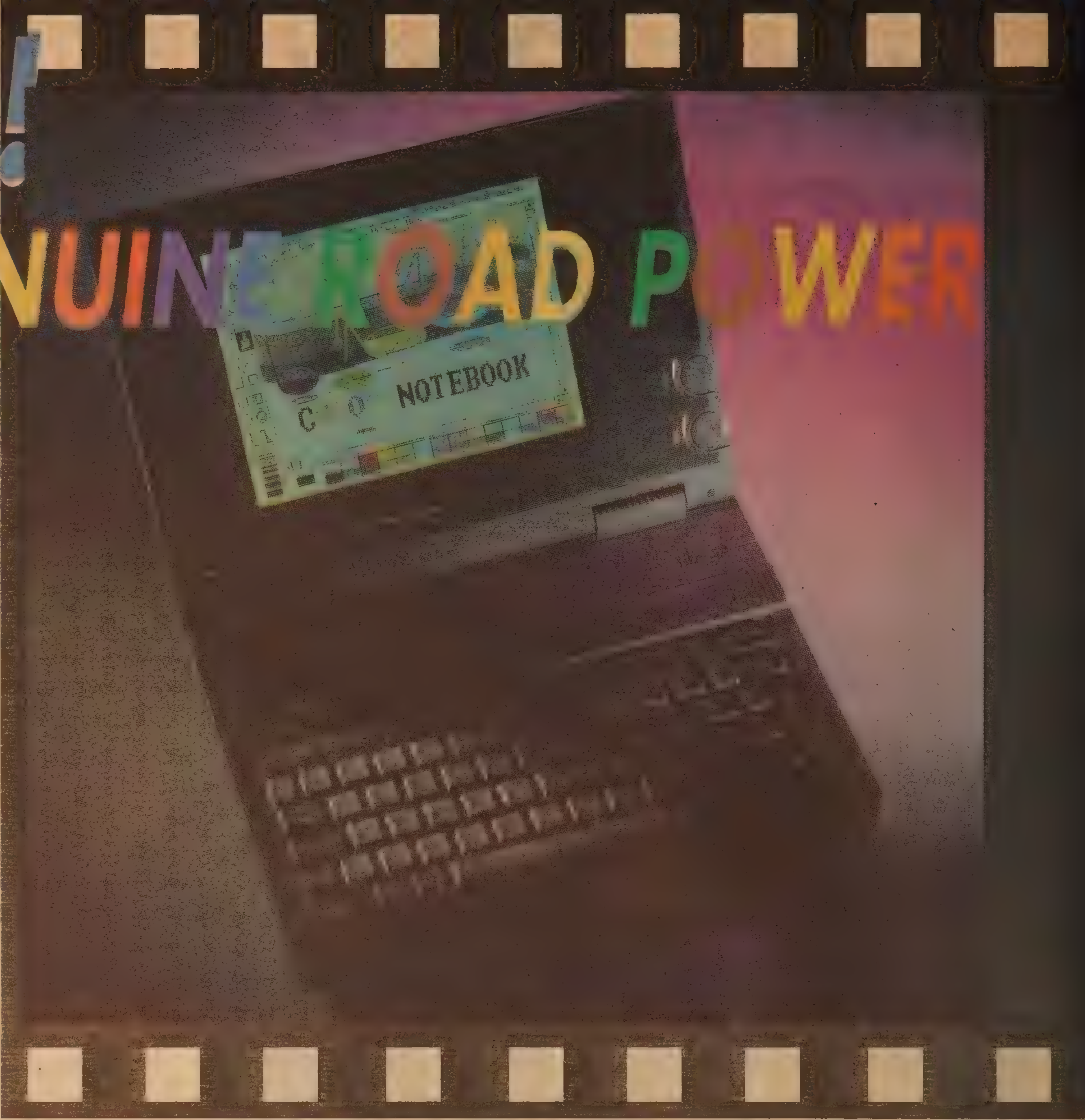

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INDUSTRY INSIGHT

New Processors, New PowerBooks

BY PAUL HOFFMAN

Paul Hoffman is an industry analyst who has been covering microcomputer technology for ten years. He can be reached on Internet (phoffman@well) and MCI Mail (264-3171). He also writes popular microcomputer books.

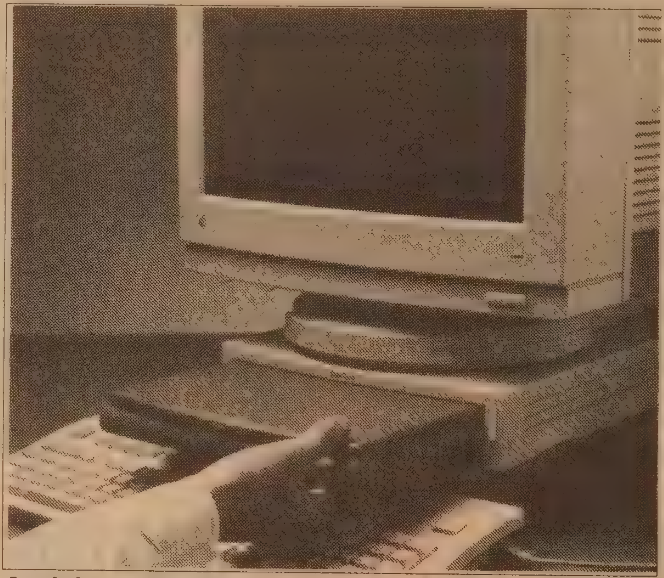
NEW CPUS WILL RUN FASTER, BUT SPEED INCREASES MAY BE ELUSIVE

Chip designers have their work cut out for them in the next few years. Although advances in manufacturing continue to drive chip prices down, users' insatiable desire for speed has forced chip designers to find tricks and quirks in order to make the next generation of chips.

At the recent Microprocessor Forum, sponsored by the excellent (if costly) *Microprocessor Report* newsletter, technical details about the most recent, and a few unannounced, CPUs were revealed. These details show that the speed improvements that we have seen in the previous few years in microcomputers may not all come from faster CPUs in the future.

Intel gave a few more details about its forthcoming Pentium processor (see story below about the name of this CPU). The chip, originally called the "P5" and "i586" was supposed to be released by now, but Intel delayed the shipment for undisclosed reasons. The new chip will be significantly faster than the current crop of 486 CPUs due to its superscalar nature, which allows two instructions to execute at the same time under many conditions. Without giving any real examples, Intel said that the processor would run twice as fast as 486s at the same clock speed on software that was recompiled for the Pentium, and would run five times as fast for floating-point math instructions. The chip has two separate (but small) caches, one for instructions and one for data. The dual-cache method lets the chip run faster than a single larger cache and allows it to speed execution of branch statements.

The new CPU has a much faster floating-point arithmetic section that will greatly speed up programs that use this type of math, such as some CAD and graphics programs. Again, the speed increase will be even more noticeable on programs that are specifically recompiled for the Pentium. The chip also tracks internal data integrity, something that Intel and the Intel clone makers have ignored in the past. The internal parity coverage only slows the chip down by a tiny fraction, but gives much more assurance that the processor is working as expected.



Apple's new Duo line combines portability and desktop capability.

Many other chip manufacturers showed their new designs as well. In fact, from the techniques detailed in the other presentations, it became clear that Intel still has lots of tricks that it can use in future processors that will give it significant speed increases. During the two-day forum, ARM and AT&T showed the workings of their low-end RISC processors that can be used in hand-held computers; IBM and Cyrix showed how they got improved performance in their Intel clone CPUs; Motorola described the changes that it will make for the next generation of CPUs used in Macintoshes (the 68060); and DEC described the future of its Alpha RISC chip. Of the presentations, Motorola's was the most disappointing, promising only a lower improvement in speed than Intel and no delivery until almost two years from now.

Chip manufacturers have to be sure that new chips work with old software, and that has always caused them problems. The new Pentium chip, as well as the 68060, will both work with old software just fine, but old software won't run as fast as software that has been specifically compiled for the new chip. This is due to the way that the new chips get their speed boost. The new generation of chips can run two (and in some cases up to five) instructions at the same time. However, the instructions must all be "compatible" for them to execute in this fashion; otherwise, the chip runs them one at a time like in the current models. Reordering the instructions to work best on the new processor should not slow them down for old processors.

Intel stressed that it was working with compiler vendors to make sure they understood the rules for making programs run faster on Pentium than on earlier processors. It is likely that most major software companies will release new software next year that takes advantage of the Pentium. Likewise, Apple is sure to modify the Macintosh operating system software for the 68060. However, users may discover that although benchmarks run much faster on the new families of chips, their daily work will probably not get the

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Being proprietary has some advantages, and Apple is using that advantage to the fullest with its new Duo System, a notebook computer similar to the PowerBook which can be docked to a desktop unit when you are in your office. The idea has been tried unsuccessfully many times in the PC industry, but no one could ever agree on docking standards so the solutions always ended up being for a single vendor. Apple, being essentially the only manufacturer of Macs, could make the specification and know that only it had to live by it.

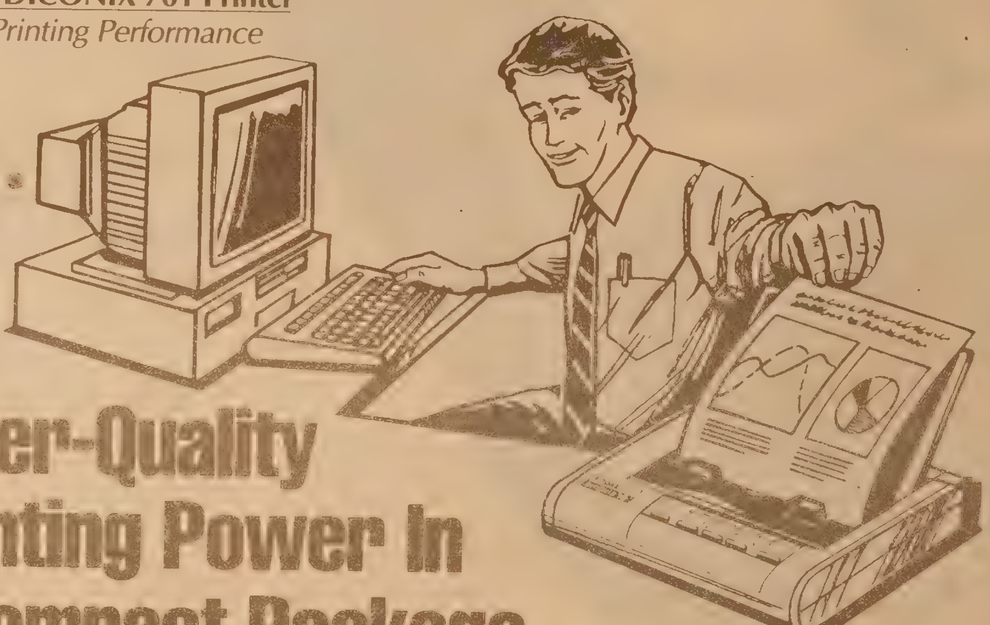
The Duo system eliminates one of the major hassles with earlier PC docking systems: cables for connecting the portable to the desktop system. The docking unit sucks the portable into its slot, rather like the way a videotape is inserted into a VCR. Instead of having to hook multiple cables between the two systems, the user simply inserts the portable in the slot. The portable part of the Duo system is available now and costs less than the equivalent PowerBooks due to the fewer ports and no floppy drive (note that the lack of the floppy drive makes the Duo much lighter than the PowerBook). The docking station can be connected to any desktop display up to 16 inches, a keyboard and mouse, and floppy drive.

Apple's incredible success with the PowerBook line (over 400,000 sold in the first year) has given it a great deal of clout in the portable market. While many PC portables let you connect the portable to a full-size screen, the low speed and high prices of those systems have made users shy away from using them as their primary computers. The Duo system, on the other hand, is specifically designed for portable and desktop use and offers enough power for almost all business users in a single package. The docking unit is not cheap ($1080), but the combination gives businesspeople who need most of their resources available while traveling an easy way to create a full desktop system when they return from their trip. People who want a full computer in a portable will buy the standard PowerBooks; those who only want the ports on their desks will buy Duos.

INTEL ANNOUNCES PENTIUM

Since it wants to be able to trademark the name of its new CPU, Intel has dubbed the still-unreleased product "Pentium" instead of the next logical number, the 80586, 586, or i586. Internally, the not-at-all-secret code name for this chip has been the "P5," and the next generation of the chip is being called the "P6" by Intel employees. However, Intel lost the trademark protection on the numbers "386" and "486" a few years ago, and wants to be able to call its CPUs by names that can't be appropriated by the CPU clone makers.

The Pentium name, however, leaves much to be desired from a marketing standpoint. According to the company that helped Intel name the chip, the idea was that "penta" means "5" (like in the 586) and that "ium" sounds like a chemical element. However, many industry leaders said that Pentium sounds more like something that comes in a Procter and Gamble product than a chip. Some computer companies said that they would initially use the Pentium name in their advertising for new systems using the chip, but would drop the name as soon as other chip makers come out with their own 586



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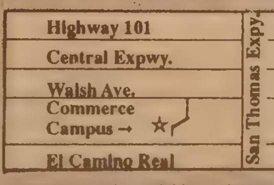

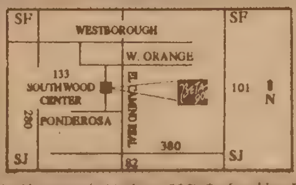

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Pentium may have connotations of "5" for some people, but the phonics of the name can conjure other images. The name sounds similar to "pent up" and "pendulum," neither of which gives much confidence to someone buying a high-end computer. Intel's choice of the name is also fairly short-sighted. Intel is already working hard on the next generation after Pentium, and that chip could be released in as little as two years. What's next—Hexium? Sexium? Intel will have to find a completely different name for the next CPU, which will make it seem like their line of chips is less contiguous than that of their competitors, who use boring names like 486, 586, and so on.

FRANKLIN LOWBALLS POCKET-SIZE COMPUTER MARKET

While we wait until sometime next year for $1000 personal digital assistants (PDAs), Franklin Electronic Publishers has challenged the industry by releasing the $200 Digital Book System, which can display the full text of books in a 3" x 5" package that weighs only 5 ounces. Admittedly, the Digital Book System will not take notes or send faxes, but if all you want is one of the many reference books Franklin offers in a tiny package, you won't want to spend the large amounts for next year's models.

The DBS-1 computer can accept two book modules, each of which can hold up to 45MB of information. It has a full QWERTY-style keyboard and comes with built-in software for searching, and even limited note-taking. The base unit comes with two books, a Merriam-Webster dictionary with 275,000 definitions and eighty thousand common spelling corrections, and a "book" that plays ten word games. It has a 5-line, 40-character screen that can handle rudimentary graphics. Using four lithium button batteries, you can use the system up to sixty hours between battery changes.

Franklin freely admits "the DBS-1 is Franklin's razor; the Digital Books are the blades." Two additional titles are already available: Video Companion, which lists summaries, stars, and so on for seven thousand movies available on video ($60) and the Handbook of Adverse Drug Interactions that helps physicians predict reactions between drugs ($100). Likely future books include the Baseball Encyclopedia, the Bible, thesauruses, and other professional reference books.

As companies like Apple and EO try to define the PDA market in the $1000–$3000 range, other companies like Franklin will be able to capture the low end of the market with smart single-purpose computers. Although companies like Casio and NEC haven't done very with their small note-taking computers in the US, they have a strong following in Japan and Europe. If Americans have been waiting until they see the first crop of PDAs, they may turn to the keyboard equivalents when they see the price and size of the PDAs next year. Some innovations that have only been made commercial in Japan (such as built-in barcode scanners) may appear here in portables costing $200–$500 to challenge the systems that will surely cost at least $700. ■

Continued on page 40

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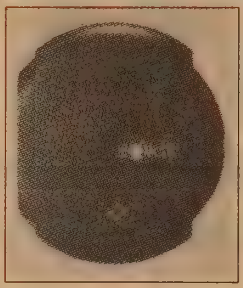

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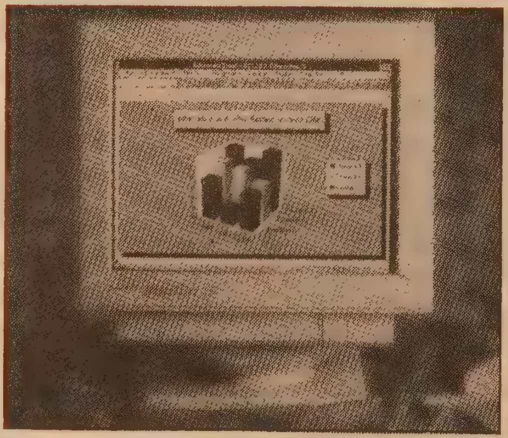

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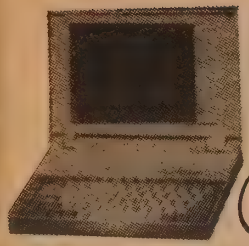

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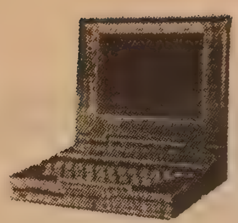

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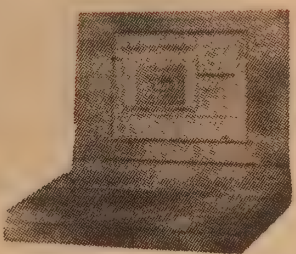

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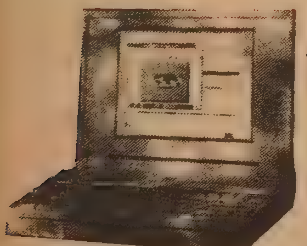

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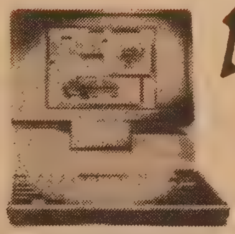

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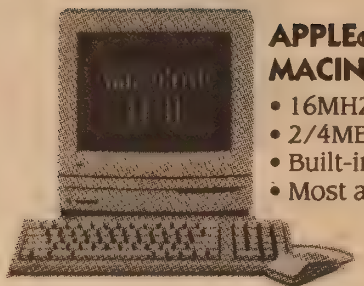

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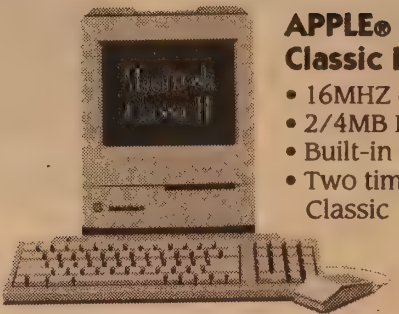

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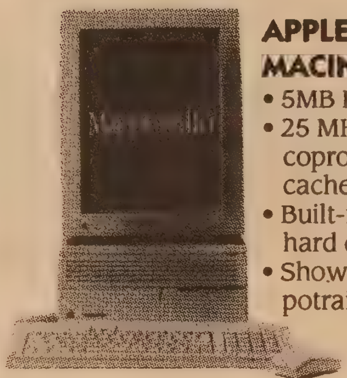

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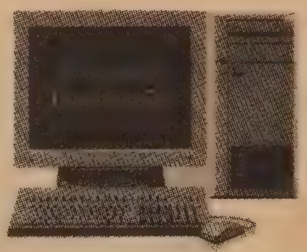

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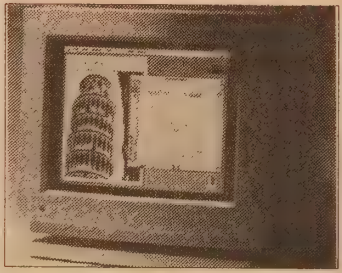

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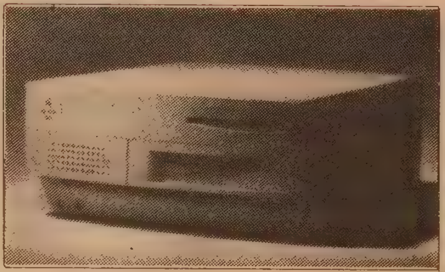

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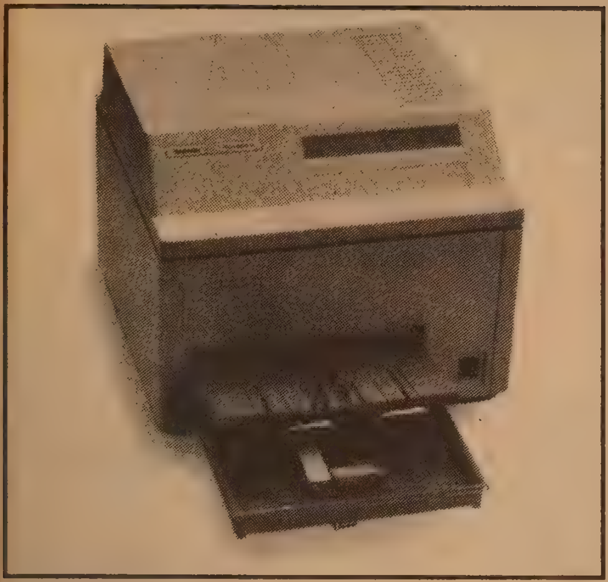
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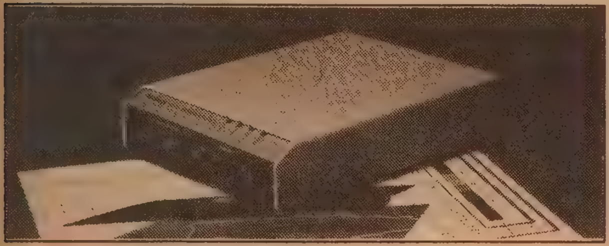

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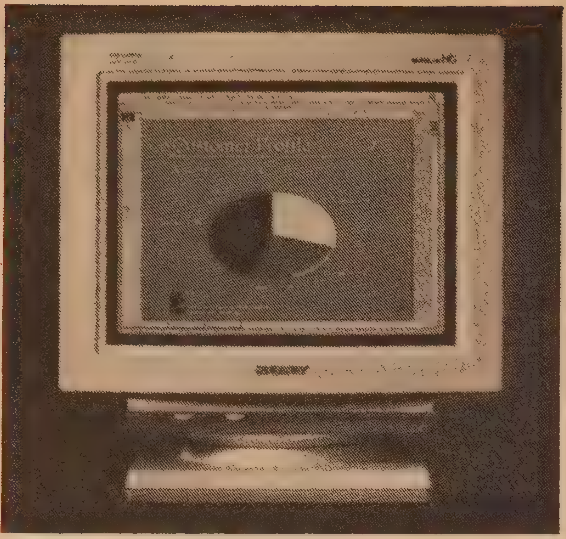

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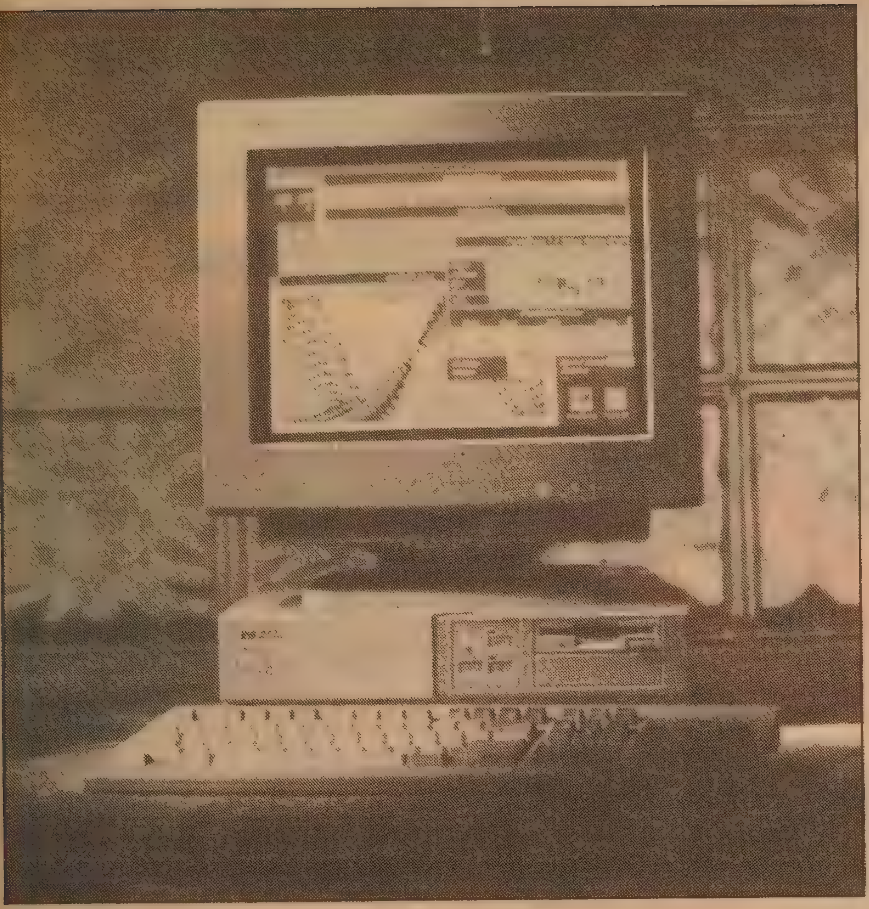

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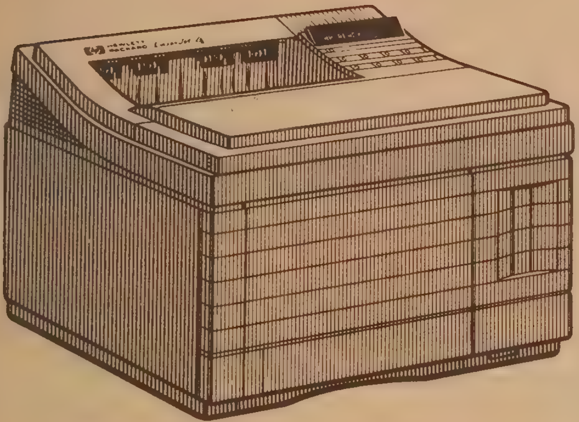

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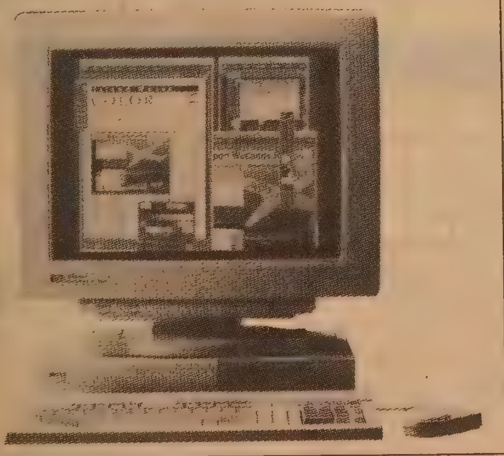

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More On Access To Public Information

Government Is For *The People Only When It Is* By *The People*

BY JIM WARREN

REALIZABLE FANTASIES

This column concerns what ain't, but could be—as soon as some of us do it.

MONITORING THE PUBLIC'S BUSINESS

Two issues ago, this column reviewed examples of citizen access to computerized public records. It must have struck a nerve, for it generated more reader mail and speaking invitations than any column since we began this series in June 1988.

As we spoke to several lay groups, we were surprised by how little most folks seem to know about how their government—local, state, or national—operates and how they can monitor it and participate in it. On the other hand, we were especially delighted to see their furious interest in learning more and pursuing informed action.

We hope it continues long after the recent elections and Perot Candor. Government is *for* the people *only* when it is *by* the people.

CALIFORNIA'S PUBLIC INFORMATION

The California Public Records Act (CPRA) mandates that most government records, memos, notes, and data are public, and that citizens can obtain copies at cost of copying.

Note: Although responsible agencies set copying costs at no more than the incremental cost of copying, others treat them as profit centers (uh, government calls it "income," not "profit") by prorating every conceivable cost into the "copying" fee—computer lease, building depreciation, etc.

Here are some examples of public information in California. Their uses are limited only by imagination (and sometimes statute). They are almost always maintained by their agencies in machine-readable form, but machine-readable copies may or may not be available. (If they're not, raise hell! Also, we'd like to know about it.)

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Assessor records. These are the records of real estate property assessments. Their use is restricted by law to the singular purpose of assuring fair and accurate assessments—but that gives significant latitude. They contain at least the property owner's name and mailing address, the location of the property and its parcel number, its classification (residential, commercial, apartments, etc.), assessed value, homeowner exemption (if any), etc. (It's interesting to spot homeowner exemptions claimed by owners giving out-of-state mailing addresses.)

Assessor records may or may not include a detailed building description, e.g. number of bedrooms, floor area, etc. Some county assessors are withholding such information as an owner-privacy issue.

Some businesses and bureaucrats, such as real estate appraisers and building inspectors, are trying to penetrate that privacy protection. The appraisers want to make appraisals easier and more accurate—presuming, of course, that the assessor's descriptions are accurate. This has always been somewhat in question, even more so since Proposition 13 reduced the need for accurate descriptions for assessment purposes.

Some fine-seeking police-style building inspectors want to ferret out vile evildoers who dare to modify their homes without first bowing before bureaucrats and social engineers—and, of course, paying endlessly escalating fees. They require permits for changing a water heater, replacing roof shingles, plumbing a decorative fountain, etc. Ahhh, but I digress.

Assessor records are maintained in computer form and copies are usually available in machine form for no more than a few hundred dollars for an entire county.

Trade and professional licensing records. The state requires licenses for an amazing variety of occupations—beauticians, barbers, real estate sales creatures, teachers, building contractors, attorneys practicing before the California bar (or tavern), physicians, etc.

Machine-readable budgets are especially useful for citizen oversight. However, some jurisdictions have such records in machine form, but refuse to release them in any form except paper. On the other hand, some service-oriented jurisdictions are extending public access to such records by placing them on dial-up BBSes.

There has even been talk of licensing computer programmers, but such bureaucratic lunacy has so far been resisted in most states.

Although licensing serves the theoretical purpose of assuring competency and providing consumer protection, numerous reports have illustrated that it provides little more than a false façade of protection. Only a minuscule fraction of licenses are ever revoked, and consumers are usually prohibited from seeing complaints. One attorney commented that such licensing primarily functions as competition control and job security. In the case of building contractors, it appears to exist primarily to assure that worker's compensation is paid—usually to a state fund.

Although complaint files are rarely available, the names and addresses of license holders and usually some classification information are available as public records, and most licensing agencies will readily sell licensee lists on magtape.

Board, council, and commission agendas, minutes, and budgets. The agendas, minutes and budgets of almost every city council, county board of supervisors, school board, planning commission, water board, harbor district board, sewer district, parks district, etc., are now created and retained in machine-readable form—using word processors. They are always available in paper form, and can often be obtained on diskette—useful for searching months or years of such records for mentions of topics or names of interest. Machine-readable budgets are especially useful for citizen oversight. However, some jurisdictions have such records in machine form, but refuse to release them in any form except paper.

On the other hand, some service-oriented jurisdictions are extending public access to such records by placing them on dial-up BBSes (computer bulletin board systems). *Neat!*

We are most interested in knowing of those agencies that provide such online access. We're equally interested in knowing of agencies that refuse access to computerized records in computerized form.

From time to time in future columns, we will continue to outline public access to computerized public records at both state and federal levels.

DIGRESSION: TOYS VS. MINDTOOLS

Ever since microcomputing began in the mid-'70s, we have contended that these information processing machines are only as powerful as the information to which they have access for processing. Without significant data, they are merely innovative, delightful (frustrating) techno-toys. But, *with* access to significant information, they become potent tools to assist informed decision-making and innovation. They become unsleeping research librarians, policy analysts, vigilant accountants, and design assistants—whether one is designing a better mousetrap or a better, more responsive, more responsible government.

Their power to assist design and decision processes is limited only by their access to useful information, plus our ability to specify how they are to assist our analyses.

They are the modern-day Great Equalizer. And perhaps nothing needs equalizing more than out-of-control government and bureaucracy. After all, it is the only societal entity that can legally steal, kidnap, imprison, and kill. And it is the entity that controls rampaging monopolies and corporations—or is controlled by them when citizens fail to remain vigilant. ■

Jim Warren founded InfoWorld, *the DataCast proposal for paperless electronic newspapers, Wireless Digital, Initiative, Inc., and one of the nation's largest public microcomputer conventions. He was founding host of* PBS's Computer Chronicles, *founding editor of* Dr. Dobb's Journal, *and has chaired various trade and professionals' organizations. He holds graduate degrees in computing (Stanford), medical information science (UC Medical Center), and mathematics & statistics, and once chaired the College of Notre Dame-Belmont Mathematics Dept. He organized and chaired the landmark First Conference on Computers, Freedom & Privacy (1991) sponsored by a dozen nonprofit civic, professional, and industry organizations, and received one of the first Electronic Frontier Foundation Pioneer Awards (1992). He is also a member of the board of directors of Autodesk, Inc.*

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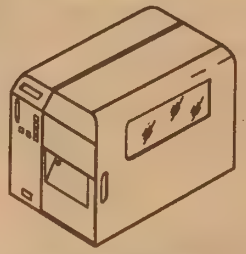
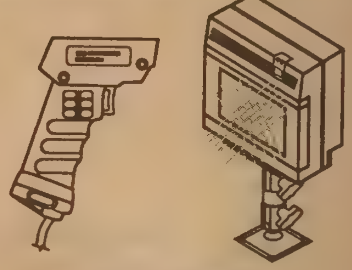
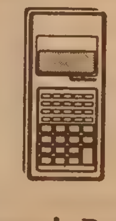


Bar Code Label Printers, Software, and Supplies



Laser Scanners. Omnidirectional, hand-held/hands-free, fixed mount.



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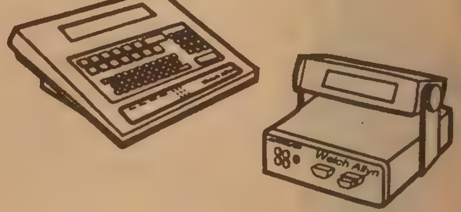

Welch Allyn bar code readers/scanners. Over 15 years leadership in bar code manufacturing.

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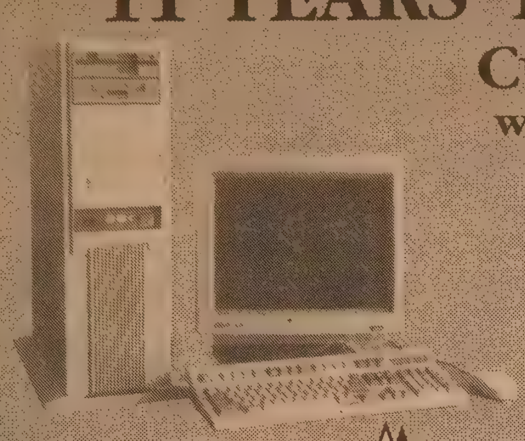

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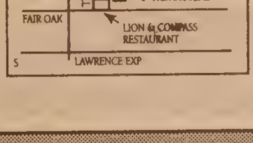

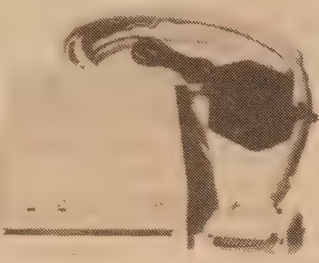

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NEWS & VIEWS

continued from page 14

Because my professional career has spanned local government between pre-computer days and now, I have observed how computers have affected the rights of citizens—and grand jurors—to public information. My impression is that computers have created mounds of data that are accessible only to a few insiders, and that when computerized information is publicly accessible, it is nearly unreadable or prohibitively expensive. In short, we have succeeded in transmitting B.S. at the speed of light, but to little avail.

It is appropriate that the computer industry accepts some responsibility for creating electronic barriers between the governed and the governing. I hope Mr. Warren, and your magazine, will continue to make this fine contribution to the ideal of a truly informed citizenry.

Bruce T. Olson, Ph.D.
Executive Director
American Grand Jury Foundation
Modesto

We welcome correspondence from our readers. Letters to the editor should be directed to one of the following physical or electronic addresses:

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MISLEADING CLAIMS

I would like to alert your readers to some misleading claims appearing in some of your advertisements.

I realize that it's a standard (if less than completely honest) practice of hard drive manufacturers to list their products' "unformatted" capacity. Fujitsu has gone a step further, inflating its hard drive capacity specs an extra 5% by redefining "megabyte" as one million bytes. As every engineer on Fujitsu's payroll can tell you, a megabyte is actually 1,048,576 bytes. The company can't plead ignorance, since it rates the capacity of its popular 3.5" floppy drives as 1.44MB, not the 1.46MB that would be consistent with the million-bytes definition.

Robert Lauriston
San Francisco

I'm preparing to purchase a computer system and have found your periodical an excellent source of information and computer advertising. However, I've encountered a problem of misinformation in many ads for flatbed scanners which I would like to make you aware of.

I saw an ad several issues ago for a new scanner, which offered true 800dpi resolution (the Artiscan from Tamarack). To make a long story short, this is not an 800dpi scanner, but a 400 x 800 scanner with interpolation. Your August 3 issue, for example, contains a number of ads for Umax and Artiscan scanners which claim resolution they cannot provide.

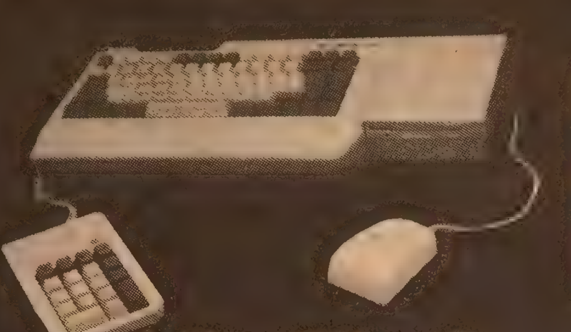
I called four dealers who have misleading ads. They either claimed that they were given wrong information by the manufacturer or were told by the manufacturer to advertise this way.

All agreed to at least look into the problem. I would appreciate it if you would look into this matter.

Jim Spiri
San Francisco

Readers, if you encounter this sort of inaccurate information, please bring it to our attention.

—eds.



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286-12	$780	$860	$970	$1220	$1310
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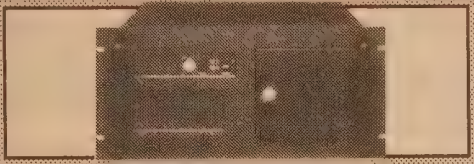
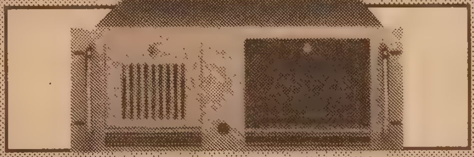
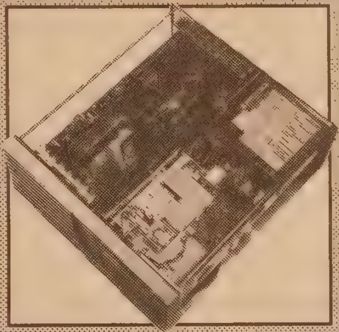
386SXC-20	$950	$1020	$1100	$1390	$1475
386DXC-33	$1170	$1220	$1300	$1580	$1670
486DXC-33	$1700	$1820	$1900	$2210	$2300

BASIC CONFIGURATION

- Passive Backplane Boards
- CPU Board w/ Processor
- Air Cooling Fan Subsystem
- 1:1 2HD/FD Controller Card
- 2MB Memory up to 32MB
- 5.25" 1.2MB FD
- 250W Power Supply
- 2S/1P I/O Card
- Custom Configuration is Available







PASSIVE BACKPLANE COMPUTERS

BASIC SYSTEM	
286C-12	$375
386SXC-16	$480
386SXC-20	$540
386DXC-33	$640
436DXC-33	$1215

BASIC SYSTEM CONFIGURATION

- 8 Slot Passive Backplane Board
- Single CPU Board & CPU
- 1MB Memory Installed
- 1:1 IDE 2HD/2FD Controller
- TEAC 1.2MB or 1.44MB FD
- 101 Enhanced Keyboard
- Baby AT Case w/200W P.S.

Custom Configuration Available

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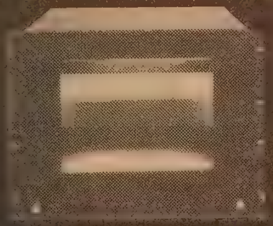

$250

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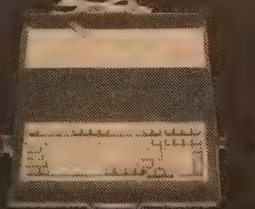

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20 SLOT	$240

- Special slot configuration available

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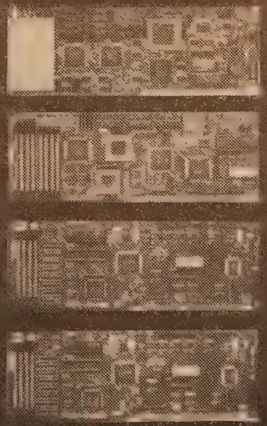

286C-12 w/CPU	$150
386SXC-16 w/CPU	$230
386SXC-20 w/CPU	$280
386DXC-33 w/CPU	$450
486DXC-33 w/oCPU	$595

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Continued from page 26

Dow Falls To Yearly Low Amid Reports Fed Won't Ease Interest Rates

The Dow Jones Industrial Average fell to its lowest level in 1992 last month after reports surfaced that the Federal Reserve will most likely refuse to cut interest rates further until after the presidential election. Poor earnings coupled with investor uncertainty surrounding the upcoming election held Wall Street in check during the monthlong trading session ended October 23rd.

The net effect of that news sent shivers through investors and jitters through Wall Street, taking the Dow Industrials down 42.68 points, or 1.31%, to 3207.64.

Computer stocks, on the other hand, were able to buck the national downtrend as those stocks represented in the *MicroTimes* Stock Index leapt up 222.75 points, or a hefty 6.72%, before settling in at 3536.03.

In the accompanying table, gaining shares outpaced lagging issues by a 22 to 10 count, while nine stocks were able to sprint to new 52-week highs and eight stocks fell to new 52-week lows.

Informix was among the more popular stocks with investors last term as that stock rose $6.88 a share, or 33.54%, and was the largest percentage gainer of the lot. The company reported third-quarter earnings of 37 cents a share—a 56% increase in profits compared with earnings registered in the year-earlier quarter. Separately, Lehman Brothers optimistically raised its investment rating for the firm to "outperform" from "high risk." In addition, Lehman Brothers also boosted its 1992 and 1993 profit projections for the firm. As a result, Informix was able to climb to its new 52-week high of $31 before slipping down to its close of $27.38.

IBM was unable to break away from its southerly route last month despite the company's attempts to win investors' praise by unveiling a new expanded consulting division and a new line of low-cost machines. During the trading session, the stock fell to a new 52-week low of $67.75 before settling in at $69.13, down $13.13 a share, or 15.96% from the previous week. Slow computer sales have been cited as a primary contributor to IBM's poor performance. IBM was our portfolio's largest dollar loser.

Borland International also witnessed its stock price fall as that stock shed 16.34% of its value, or $6.25 a share, before reaching a closing mark of $32. Last period, Borland reported second-quarter earnings amounting to 20 cents a share compared with a $4.21-per-share loss on a charge against earnings last year. Borland was the largest percentage loser of the lot. ■

EXCH	COMPANY		TICKER SYMBOL	CLOSING PRICE 09/25/92	CLOSING PRICE 10/23/92	NET CHANGE IN MONTH	PERCENT CHANGE IN MONTH	P/E RATIO	ANNUAL DIVIDEND RATE	ANNUAL DIVIDEND YIELD	ANNUAL HIGH	ANNUAL LOW
	SOFTWARE											
OTC	Adobe	(L)	ADBE	28.25	30.50	2.25	7.96	15	0.32	1.05	68.50	25.25
OTC	Aldus	(L)	ALDC	12.75	14.50	1.75	13.73	24	0.00	0.00	44.25	10.25
OTC	Autodesk	(H)	ACAD	43.38	51.00	7.63	17.58	26	0.48	0.94	53.00	23.25
OTC	Borland	(L)	BORL	38.25	32.00	–6.25	–16.34	–	0.00	0.00	86.75	25.25
OTC	Informix	(H)	IFMX	20.50	27.38	6.88	33.54	21	0.00	0.00	31.00	5.88
OTC	Lotus	(L)	LOTS	19.13	19.25	0.13	0.65	12	0.00	0.00	38.75	14.75
OTC	Microsoft	(H)	MSFT	78.75	88.63	9.88	12.54	34	0.00	0.00	90.00	58.50
OTC	Novell		NOVL	28.13	31.00	2.88	10.22	41	0.00	0.00	32.50	21.38
OTC	Oracle	(H)	ORCL	19.00	23.13	4.13	21.71	47	0.00	0.00	23.13	12.00
OTC	Software Publishing	(L)	SPCO	9.25	8.38	–0.88	–9.46	–	0.00	0.00	26.25	6.75
OTC	Symantec	(L)	SYMC	10.25	11.75	1.50	14.63	13	0.00	0.00	51.00	5.88
	HARDWARE											
OTC	Apple		AAPL	45.50	48.75	3.25	7.14	12	0.48	0.98	70.00	42.75
OTC	AST Research		ASTA	15.00	18.50	3.50	23.33	9	0.00	0.00	24.50	11.25
NYS	Commodore		CBU	7.25	7.38	0.13	1.72	9	0.00	0.00	19.25	6.75
NYS	Compaq	(H)	CPQ	33.63	38.63	5.00	14.87	17	0.00	0.00	42.38	22.13
NYS	Digital Equipment		DEC	40.13	33.88	–6.25	–15.58	–	0.00	0.00	65.50	33.25
OTC	Dell	(H)	DELL	28.13	34.63	6.50	23.11	19	0.00	0.00	34.88	13.91
NYS	Hewlett-Packard		HWP	57.75	55.13	–2.63	–4.55	15	0.80	1.45	85.00	44.63
NYS	IBM	(L)	IBM	82.25	69.13	–13.13	–15.96	–	4.84	7.00	101.38	67.75
NYS	Silicon Graphics		SGI	18.50	23.63	5.13	27.70	–	0.00	0.00	29.75	14.13
OTC	Sun Microsystems		SUNW	30.75	32.00	1.25	4.07	19	0.00	0.00	35.88	20.75
NYS	Xerox		XRX	78.75	77.25	–1.50	–1.90	19	3.00	3.88	82.25	60.25
NYS	Tandy		TAN	27.25	26.75	–0.50	–1.83	12	0.60	2.24	31.25	22.25
	CPU'S											
NYS	Advanced Micro Devices		AMD	11.50	14.38	2.88	25.00	5	0.00	0.00	21.50	7.38
OTC	Intel	(H)	INTC	64.75	67.00	2.25	3.47	17	0.40	0.60	69.00	39.75
NYS	LSI Logic		LSI	6.38	7.00	0.63	9.80	–	0.00	0.00	9.88	4.88
NYS	Motorola	(H)	MOT	86.00	95.25	9.25	10.76	24	0.76	0.80	97.75	57.50
	COMMUNICATIONS											
NYS	AT&T		T	43.50	43.13	–0.38	–0.86	92	1.32	3.06	45.38	32.88
NYS	BellSouth Corp.		BLS	52.00	51.13	–0.88	–1.68	15	2.76	5.40	55.50	43.38
OTC	MCI	(H)	MCIC	35.00	36.25	1.25	3.57	17	0.10	0.28	36.75	25.25
NYS	Northern Telecom	(L)	NT	32.63	34.25	1.63	4.98	18	0.36	1.05	49.25	30.50
NYS	Pacific Telesis		PAC	44.00	40.13	–3.88	–8.81	15	2.16	5.38	45.00	36.88

KEY: NYS = NEW YORK ASE = AMERICAN OTC = OVER THE COUNTER
(H) = NEW HIGH REACHED IN PERIOD . (L) = NEW LOW REACHED IN PERIOD

MARKET DIARY:

ADVANCES	22
DECLINES	10
UNCHANGED	0
NEW HIGHS	9
NEW LOWS	8

MOST ACTIVE ISSUES:

LARGEST DOLLAR GAINER	Microsoft	$ 9.88
LARGEST DOLLAR LOSER	IBM	$ –13.13
LARGEST PERCENTAGE GAINER	Informix	33.54 %
LARGEST PERCENTAGE LOSER	Borland	–16.34 %

	CLOSE 09/25/92	CLOSE 10/23/92	NET CHANGE IN MONTH	PERCENT CHANGE IN MONTH
MICROTIMES STOCK INDEX	3313.28	3536.03	222.75	6.72
DOW JONES INDUSTRIAL AVERAGE	3250.32	3207.64	–42.68	–1.31
STANDARD & POOR'S 500 STOCK INDE	414.35	414.10	–0.25	–0.06
N.Y.S.E. COMPOSITE	227.73	227.83	0.10	0.04
NASDAQ COMPOSITE	577.20	597.30	20.10	3.48

CLOSING QUOTES FOR GRAPH:

DATE	MICRO TIMES	DOW JONES
04/10/92	3566.89	3255.37
05/08/92	3642.36	3369.41
06/05/92	3562.74	3398.69
07/02/92	3182.43	3330.29
07/31/92	3367.19	3393.78
08/28/92	3198.48	3267.61
09/25/92	3313.28	3250.32
10/23/92	3536.03	3207.64

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Made in USA, Basic System with 1 MB BAY 486DX-50 W/64K Cache	890
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Universal Information Highway Agenda

Hidden In Clinton Presidency

BY BROCK N. MEEKS

Lurking within the Clinton Presidency is a unique plan to fund, develope and build a universal fiber optic information highway. It won't happen during the first hundred days, but Clinton aides say it could end up on the "technological priority short list" at the Office of Science and Technology Policy (OSTP), the agency responsible for setting the nation's high-tech policy agenda. Its administrator answers directly to the Oval Office.

The not-so-secret plan could shortcut the national launch of an information "superhighway" if Clinton's administration can get policymakers to adopt a policy framework to encourage the marriage of two regulatory monopolies: local telephone and energy utilities.

The plan was developed while Clinton supporters watched their candidate sweat out the first series of hardball questions about Gennifer Flowers. The plan was drafted at the Progressive Policy Institute (PPI), the policy arm of the Democratic Leadership Council, which Clinton formerly chaired. The PPI study says there's "a political paralysis that grips the nation," stalling the telecommunications industry "that could be an engine of new skills, productivity, wealth and progressive social change."

The proposed law would make the new network a common carrier and would bar owners from holding any interest in firms that plug into it.

By making the completion of a universal fiber telecommunications network a "critical technology" and hastening its building, the nation could boost its annual productivity growth by 0.4% and add $321 billion to it's wealth over the next sixteen years, the report says.

STRATEGY

The report, though drafted by a Democratic entity, criticizes the policy of both parties on steps taken to drive the formation of a universal fiber network. "The US must complete its information superhighway soon—much quicker than the thirty-five years" it might take given the current rate of investment plans by local telcos, the plan states. Dominant Republican policy "simply embraces" a marketplace approach as the solution, "a market so gridlocked it stifles innovation," and seeks to eliminate regulation, the report states,

Democrats, on the other hand, pursue telecommunications policy "through government spending or cumbersome mandates, such as reregulating cable TV rates," the report says. The answer is to "redefine" the market for the public's benefit, say the report's authors Steven Rivkin and Jeremy Rosner.

The key to their strategy is "drawing new players into the mix" to help stimulate the growth of this information superhighway. Rivkin and Rosner are convinced these "new players" must be local energy utilities. They say a fiber network could enable electric and other utilities to "save billions of dollars" annually "for themselves and their customers" through efficient energy pricing, metering, delivery, and use.

The plan works on the premise that fiber cables carry usage and power requirement data from the home back to the utility, which then makes decisions on how much power to supply, when to supply and at what cost. Because the entire process is "managed" at a central location, it can be done much more efficiently, leading to tremendous cost savings, the report says. The added bonus is that fiber cables carrying data could also be pressed into service (with no effort) as voice telecommunications lines.

According to the report, instead of coaxing additional capital from local phone companies with the "promise of higher profits," the solution is to open the market to other sources, such as energy utilities. The report says that many of those utilities already have substantial investments in telecommunications, and improving that infrastructure could save them and their ratepayers enough to support "substantial investment" in building a fiber network. The plan states that with improved telecommunications, utilities could implement "interactive" strategies that would allow them to develop flexible pricing structures.

Such flexible pricing structures, known as "demand-side management," moderate the consumers' use of electricity as an alternative to building additional power plants, the authors say. By closely monitoring meters, the utilities could "spot price" rates for peak times of the day, charging consumers on a usage basis rather than on flat "metered" rates, regardless of when they actually were using power.

The authors say the math is simple: "Using these methods, the ratepayer's bill goes down and the utility's profits go up."

COST/BENEFIT

Other uses for this universal fiber highway are home automation, where the local utility powers up and controls certain home appliances such as dishwashers and washing machines at times when power consumption is most cost-effective. The report says that using such strategies, monthly power bills could be cut up to 24% "without consumer discomfort."

It's just these kinds of approaches that get Clinton's economic policy wonks excited, while laying the groundwork for close ties between his high-tech policy makers and those holding the purse strings. The math works out this way: If the US saved only 5% using the methods described above, the savings would be $3.5 billion per year. And savings from spot pricing alone could justify a "prudent investment" on the part of the electric utility of about $600–$800 per household for the equipment. That equates to a total of about $80 billion for private sector development of a fiber network, based on one hundred million households.

The report says building a universal fiber network would cost $100–$400 billion. (By comparison, the government-proposed National Education and Research Network, NREN, data superhighway is funded at $5 billion over five years.) The problem, the authors say, lies in how to allocate costs of the investment between telcos and utilities and how to share leftover energy savings and other profits among shareholders and ratepayers.

continued on page 275

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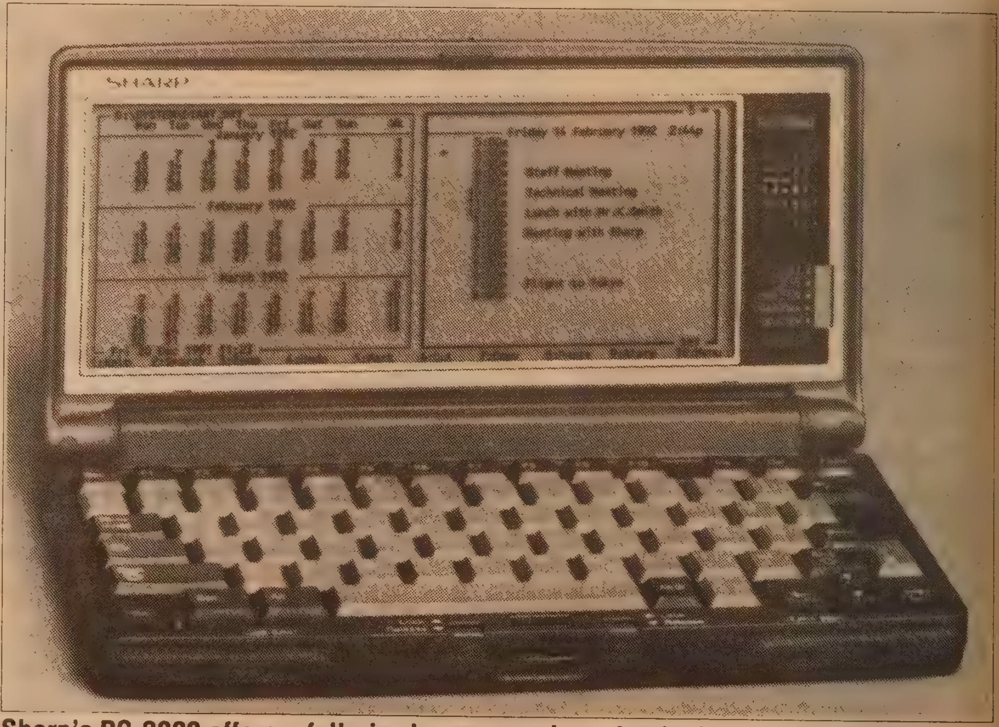
BUSINESS SOLUTIONS

The Sharp PC-3000: A Palmtop You Can Type On

Plus: Pen Products, Digital Books, PCMCIA Cards, And More

BY MITSU HADEISHI



Sharp's PC-3000 offers a full-sized screen and a selectively large keyboard.

Last month I wrote about the HP 95LX, the most popular of a growing number of DOS-compatible palmtop computers. The 95LX, however, does not have a full-size screen, and the small keyboard makes it difficult to touch-type.

There are, however, a number of somewhat larger, more full-functioned palmtops which share the 95LX's long battery life and portability, but include a full 25 x 80 character screen and much larger keyboards. One of the first machines of this class to be introduced in the United States was the Sharp PC-3000, initially available only in Asia and a recent arrival here. A number of clones of this machine have already hit the market: the Memorex Commuter Computer and the Zeos Palmtop PC are notable examples. This column will focus, however, on the PC-3000.

The Sharp PC-3000 includes 1MB of RAM installed. It retails for $995, and comes with DOS 3.3, a suite of built-in applications (including an address book, a scheduler, a text editor, a simple spreadsheet, and LapLink) all in ROM, as well as a serial and a parallel port (with the necessary cables, a convenience that's missing from the standard 95LX package). The unit measures 8.7" x 4.4" x 1", and weighs just over 1 lb. It is powered by three AA batteries which are supposed to last for approximately one hundred hours of continuous use (I have not been able to verify this claim). The unit also comes with two PCMCIA 1.0 slots; this allows you to have an extended RAM or Flash RAM card as well as a ROM application card plugged in at the same time.

The unit is physically quite nicely designed, though I would have preferred a different exterior color than its standard battleship grey. The keyboard is not full-size, but large enough to touch-type on. Although the keys are much easier to use than those on much smaller machines such as the 95LX, the arrangement is still somewhat cramped.

The display is relatively easy to read, though not as clear, ironically, as that of the less expensive Sharp Wizard series. This is due partially to the display's somewhat low contrast and the fact that in order to cram twenty-five lines of text onto one display, the letters have been made somewhat smaller than they otherwise might be. The convenience of being able to run DOS applications unmodified makes up for this problem, though I would have liked to see an alternate large-character mode, sacrificing screen space for readability at a distance. The unit will also display graphics in a 640 x 200 pixel mode.

The built-in functions are implemented from a pop-up shell, which can be invoked at any time via a hot-key. As with the 95LX, however, you cannot run a built-in application while a normal DOS application is already running. Nonetheless, the setup is better designed than the 95LX's; it is generally easier to switch between applications, and the built-in applications will automatically start up from where you last saved your work. (Not included in the package of built-in programs, however, was the typically ubiquitous World Time function.)

The address book, scheduler, to-do list, and text editor are all quite functional, though without frills. The built-in worksheet provides a subset of Lotus 1-2-3 functionality; it will load .WKS and .WK1 files created by Lotus 1-2-3, though it does not have all of 1-2-3's features. In particular, there is no graphing function, and no support for macros. However, the PC-3000 does provide a full set of calculation functions and basic scientific and financial functions as well, and

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(510) 656-1117

Sharp PC-3000
Sharp Corporation
1-800-321-8877

thus is an adequate tool for basic computations. The Lotus compatibility makes it easier to transfer worksheets to and from your desktop PC. The 95LX's full-function Lotus 1-2-3 release 2.2 is, of course, much more capable from a functionality standpoint, though it is limited in terms of screen space.

LapLink is included, although I was unable to get it to install on my PC. A "remote installation" is supposed to allow you to install LapLink on a remote PC via the serial port. The two machines were connected, and the "bootstrap" was sent across, but my PC halted with a divide overflow error after the initial step. I tried several configurations, including booting from vanilla DOS to get it to work, all with no success.

As I mentioned above, the PC-3000 has both serial and parallel ports, and quite conveniently cables are included. Use of LapLink, however, requires an optional LapLink cable (which can be purchased for about $35). The machine also includes an expansion bus connector, allowing the attachment of external floppy and even hard disk drives; it also features two PCMCIA 1.0 slots which can take industry-standard memory or ROM cards—the memory cards typically hold up to 2MB each (though a Stacker-equipped card can hold about 4MB of information).

Overall, the Sharp PC-3000 is a basic workhorse palmtop computer with enough horsepower to run your basic spreadsheet and text editing applications. The display and keyboard are large enough to run standard DOS applications without modification. With a list price of $995, however, the unit is a bit pricey; competing units selling for lower prices may well be better value for the money (in particular, the Zeos Palmtop PC sells for $595 and has a similar set of hardware specifications).

In case you're wondering from whom you can actually buy some of the hardware I talk about, I'd like to mention EduCALC, a store based in Southern California that specializes in palmtop computers and calculators. Their primary specialty is the HP line, but they also carry Sharp, Casio, Psion, Poqet, and other palmtop computers. EduCALC is one of the few places, for example, that carry the PC-3000.

INEXPENSIVE PEN INPUT SYSTEMS

The Inforite Corporation has announced an inexpensive pen-input system that uses a pressure-sensitive technology, meaning that you do not need to use a special electronic stylus. The MP100 will attach to a standard RS-232 port; it comes with Windows software and can be used in conjunction with Windows for Pens. The MP200 is intended primarily for point-of-sale and other electronic signature capture applications. Both models retail for $295.

Mouse Systems has announced an electronic stylus-based pen input system called PenMate. PenMate retails for $349, is compatible with Windows for Pens, and will attach to a PC through the RS-232 port.

PCMCIA NEWS

Two companies have recently announced 14.4kbps high-speed PCMCIA fax/modems.

Dr. Neuhaus, a European electronics manufacturer, has announced the Fury Card 14.4 data/fax/voice modem card which supports the PCMCIA 2.0 standard. The modem is 5mm thick and the size of a credit card, and will fit into any PCMCIA 2.0-compatible slot. The modem also supports V.42bis data compression and V.42 error correction.

Interestingly, this modem also supports two-way voice messaging using Dr. Neuhaus's Voice LTD software. Voice LTD is bundled with the Fury Card 14.4, and includes customized Windows audio drivers intended to support voice messaging. I'm not sure exactly what the point is, since few existing palmtop machines have the resources to run Windows, much less store voice messages in their limited RAM or Flash RAM storage. However, new sub-sub-notebooks are now arriving which will support the PCMCIA 2.0 standard and will be quite capable of running Windows (as well as having storage capacity of 20Mb and up).

Megahertz Corporation has also announced the Megahertz CC3144FM Notebook FAX/Modem, a 14.4 kbps v.32bis/v.42bis PCMCIA 2.0 modem. Unique to this modem card is a special connector which allows the card to be directly connected to a phone line without the need for an external "podule" to connect the unit to a phone line. The card is designed to include support for cellular operation.

DIGITAL AIRWAVES

Solectek Corporation has introduced a wireless network adapter that plugs into an IBM-compatible computer via its parallel port, and gives the machine access to LANs via a wireless connection. Services available via the wireless adapter include all of the standard LAN services, including file and printer sharing. It will retail for $899, including adapter, power supply, and installation software. Supported network operating systems include Novell NetWare, NetWare Lite, Microsoft LAN Manager, Banyan Vines, DEC Pathworks, 3Com 3+, and Artisoft LANtastic. A PCMCIA 2.0 card version will be available as well, allowing portable wireless LAN access within an office environment.

Ex Machina, Inc., has announced Notify!, a messaging system intended to give existing applications the ability to send messages to users connected to computer and paging wireless messaging networks. A variety of applications vendors are adding Notify! support to their products, including WordPerfect Corporation, Microsoft, Claris, and Symantec. This will allow standard electronic mail and other office communications systems to deliver messages to users in the field, wherever they happen to be, via a paging or other similar wireless messaging network. Support for DOS, Windows 3.1, and Macintosh clients is available.

FLASH DISK

As I mentioned in an earlier column, as it improves in speed and comes down in cost, Flash RAM could well replace hard disks someday as the medium of choice for long-term mass storage.

Computer Modules, Inc. has already introduced a product called Flash Disk, a solid-state Flash RAM-based subsystem which uses standard Intel Flash SIMM modules and has a capacity of 1–32MB. The Flash Disk is a standard ISA bus board, capable of data transfer rates of up to 2MB per second for reading.

The current drawback to flash RAM as a replacement to hard disk technology is that it is still more expensive per megabyte, and it is somewhat slow to erase; this unit will write to blank memory at a rate of 128K/sec, but if it has to erase as well, it slows to 40K/sec. However, the read speed is close to that of RAM, much faster than most standard hard disks; as the technology improves, price will inevitably continue to fall, and performance will rise. Intel has already announced much higher-density Flash RAM chips, so prices on this technology will continue to see significant drops, most likely faster than the drops in price for hard disk subsystems as time passes. The Flash Disk is appropriate for applications which involve infrequent writes and frequent reads. ■

A Universal Docking Unit

Smaller Notebook Computers Have Generated A Wave Of External Modular Peripherals, All Of Them Searching For A Way To Connect To Your Computer

BY ED KAHN

To make computers smaller, features were eliminated. In order to get these features back, modular units for the missing parts were developed. The result has been a wave of modularity: You would purchase a small computer, but then you would start accumulating a variety of devices to replace the features you sacrificed for the small size. So after getting the smallest computer you can find, you add a color monitor and keyboard to bring you back up to the standards you have grown to love on your desktop machine. But you find you are still missing the power that comes with a bunch of floppy drives, tape backups, CD-ROMs, and expansion slots.

For years, notebook computer vendors have offered docking stations to answer these needs. These gadgets are generally expensive, but the only way to get the job done if you need full desktop features as well as a portable machine. A docking station gives you a single unit to plug your notebook computer into, it usually provides disk drives and a full array of ports to connect your serial and parallel devices, an external monitor and keyboard. This gives you a full-scale desktop machine with all of the advantages of portability.

When you need portability, you unplug your notebook computer from the docking station, leaving all of your peripherals in one place. When you return, you plug in again and you are back in business with a full-featured desktop-like computer.

Axonix offers a wide range of docking stations that will work with almost any standard notebook computer and are available in different sizes, depending upon your needs. The smallest units are very basic—simply a housing that holds a two-thirds-length expansion slot so you can use a single card of your choice. Larger units hold an array of cards and drives. A typical mid-range unit has three full-length expansion slots and three 3.5" drive bays. The largest unit holds five full-length cards, two 5.25" devices—either floppy drives, tape drives, or CD-ROMs—and three 3.5" devices.

These units range in price from $322 to $476. Their advantage over the factory models is both price and flexibility. With the Axonix models, you can get just the configuration you want. The heart of the Axonix stations is their ability to hold drives (or anything else that fits into the drive bays) and expansion cards. The disadvantage is that many of these models do not offer ports for attaching keyboards and monitors.

Axonix recently introduced a new, inexpensive product called CableMate, designed specifically to answer this need. Cablemate allows you to install drivers or cards, but does offer ports for attaching all of your peripherals. The advantage of this is that if you detach your portable often, you will not have to reconnect anything except this one bus connector. It's a lot simpler than detaching and reattaching monitor, keyboard, phone lines, printer, and the like.

CableMate comes in two versions. The standard model ($199) accommodates all of the peripherals that you might want to connect to your notebook computer. The CableMate Plus ($229) is the same product, but adds a port that allows you to connect directly into one of Axonix's line of docking stations. With both products, you can achieve exactly the configuration you want and still have your stripped-down portable for on-the-go use.

This line of products is the first I have seen from a third-party source to address this set of needs. One of the reasons we have not seen other products filling this niche is because the products have to be manufactured to the specifications of each make and model of computer that they will serve. In other words, this is not a generic-off-the-shelf product. Axonix has configured the line of docking stations for a wide range of computers including all of the majors and an amazingly large selection of the less common manufacturers. While a number of manufacturers are working directly with the company to make these products available to their customers, I doubt that you will find any of these items in a store. Your best bet is to contact the company directly and let them build a system to your specifications.

I have long felt that portables should be considered modular elements of a total computer system.

CableMate goes a long way toward integrating these modules. More and more products and complete computer packages based on the modular concept are coming to market. Apple's Duo notebook and DuoDock docking module embody just this concept.

RESOURCES:

Axonix Corp.
1214 Wilmington Ave.
Salt Lake City, UT 84106
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COMPUTER OF THE MONTH:

TANDY 3800 HD

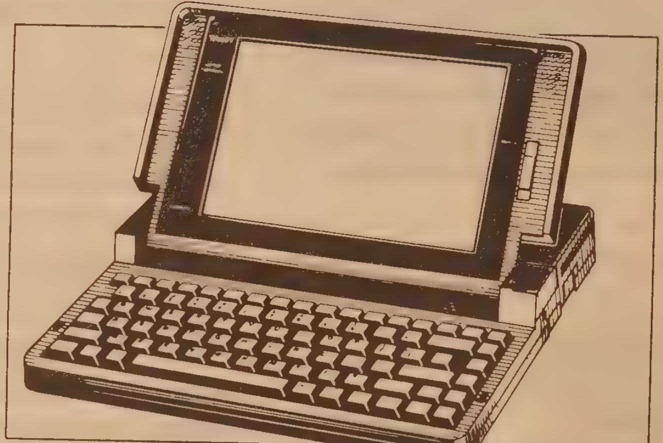
Over the years, I have come to have great respect for the Tandy line of laptop and portable computers. While many people tend to dismiss these machines, I have never run into a dissatisfied owner. For the most part, the machines are well designed, well made, and reasonably priced. If they do need service, you can't beat the national network of dealers found almost everywhere.

Tandy recently came out with the 3800 HD—this is the first computer I have examined that incorporates the revolutionary Cyrix 486 chip. The chip has the power of a 486, but the price of a 386. Running at 20MHz, the 3800 HD includes a 60MB hard drive and carries a list price of under $2000.

This notebook computer weighs about 6 lbs., including the rechargeable battery. It measures 1.7" x 12.2" x 10" and comes with 2MB of memory, expandable to 4MB ($259.95).

The display on the computer measures 9" diagonally. While that is large enough, the actual measurements of 7.75" x 5.75" introduce a ratio that makes it necessary for the individual characters to appear smaller than I like. The backlit screen is sharp, but the letters are simply too small. The resolution is VGA, but unfortunately there is no video port on the unit. This makes it impossible to attach a color monitor. From my point of view, this is a serious limitation since I prefer to rely on the LCD screen only when I am on the road.

Likewise, Tandy has not included a port for an external keyboard. The same arguments I advanced for including a video port speak to this limitation as well. The tradeoff is that you get an extremely powerful computer at a great price and in a compact size. The keyboard that Tandy includes with the 3800 HD is excellent. The layout is exactly as I would have it, with separate keys for PgUp, PgDn, Home, and End. One of the features I always look forward to on a Tandy computer is the ability to configure the Control and CapsLock keys in the layout I want. On this model, you can easily reverse the position of these two keys to get them where you think they should be.



The NiCad battery pack will give you about two hours of use before needing a recharge. This is definitely at the low end of the spectrum, with some of the competition providing battery systems that will last up to eight hours. The battery pack, however, is small enough so you can carry an extra one ($99.95) in your pocket. Recharge time is about four hours if you are concurrently using the computer and about two hours if you simply set the machine aside to recharge.

RESOURCES:

Tandy 3800 HD ,$1999
Tandy Corp.
700 One Tandy Center
Fort Worth, TX 76102
(817)390-3300

I am curious to know why the battery life is so short in view of the advanced power conservation features that are built into this computer. A standby mode lets you shut down the machine and keep your place. A display switch lets you turn off the display until you hit a key. A disk key lets you power down the hard drive until it is needed.

A compartment on the back of the machine holds both a parallel and serial port. There is also a compartment for installing a 2400 baud/9600 baud fax modem ($249.95). This leaves the serial port free for installing a mouse. You will definitely want either a mouse or some other pointing device as the machine comes with MS-DOS 5.0 as well as Windows 3.1 installed. Radio Shack was one of the first companies to include a graphical interface with their computers. While it was effective, it is good that they have abandoned their proprietary desktop software in favor of Windows.

This machine has the usual host of options. A range of carrying cases is available and there is room for a math coprocessor, although Tandy does not offer one for sale. A one-year warranty rounds out the package. If you are looking for a well-designed notebook computer that you will use on the road, this is one to consider.

continued on page 284

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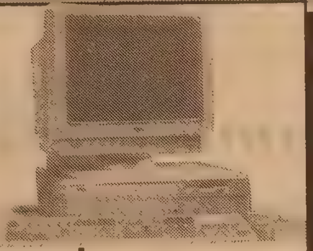

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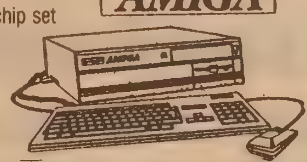

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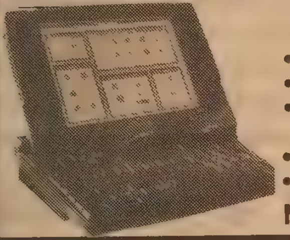

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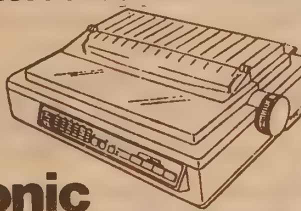

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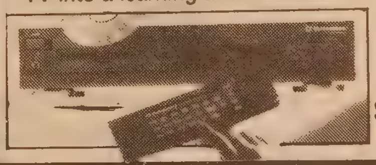

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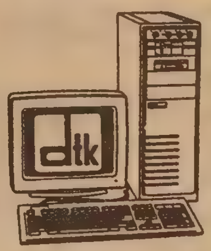

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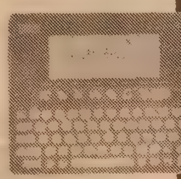

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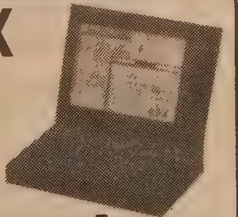

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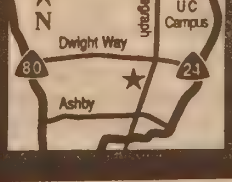

Complaints About Teleworking

As Our Experience With Telecommuting Grows We Are Discovering A Pattern Of Common Complaints And Concerns

BY ROBERT MOSKOWITZ

Once thought to be nothing more than an interesting novelty, telecommuting (or telework, as it is more accurately called by those involved in it) has already been firmly established as a viable alternative for millions of workers around California, the Pacific Rim, and the world.

But telework is not all wine and roses. Most companies find that instituting a telework program for some of its employees brings with it at least a few significant difficulties, drawbacks, and problems. Because they can often be avoided or minimized by early planning, it's important to be aware of these potential sore points. Here is a brief rundown of the most common ones.

MANAGEMENT AS EARLY ADOPTERS—NOT

Lack of management enthusiasm is commonly the most important obstacle to the successful spread of telework programs. When supervisory managers are reluctant to experiment with telework, the organization is unlikely to have much success implementing a telework program. Telework may not even be tried until every other option has been exhausted.

Managers will rarely admit they don't like the idea of telework, per se. Instead, they will offer a smokescreen of assumptions, fears, and concerns that are entirely plausible. For example, they tend to believe that telework is likely to cost a great deal to get started, and that the benefits are likely to be both intangible and slow in coming. Many reluctant managers feel that telework is an unproven approach to accomplishing work, or that it entails a rather big risk for little or no extra payoff.

Managers in this group tend not to include in their cost/benefit calculations the financial and productivity drain from existing problems and difficulties that telework might alleviate. These costs would include, for example, the time and expense of commuting to work; the health penalty paid by workers spending time in polluted, crime-ridden, high-stress office locations; and the productivity lost to the distractions and noise of conventional office arrangements. Given a choice of whether or not to implement telework, they prefer to delay or to kill the idea altogether.

It's not surprising, therefore, that at present most companies offering their employees a telework option have been driven to do so by some immediate force for change: the impending expiration of an office lease, for example, or the company's continuing inability to hire and retain enough highly skilled workers to staff an office forty hours per week, or the threat of financial penalties if the company does not comply with environmental regulations regarding how its employees arrive at work.

The fact that companies try telework—if they have to be driven to do so—works to the advantage of everyone involved. Results will be even better when telework stops being a last resort, and becomes a popular, pro-active element in plans to help already successful companies achieve greater efficiency and productivity.

DIFFICULTIES FOR TELEWORKERS

Overwhelmingly, teleworkers claim to be very satisfied with their work schedules and unhappy at the idea of reverting to full-time work in a central office. Most of the people who become dissatisfied with telework discover this quite soon after they begin, and—since most programs are optional—return fairly quickly to their previous schedules. Nevertheless, even the most satisfied teleworkers can face a few special difficulties caused specifically by this novel work regimen.

In some cases, teleworkers experience too much personal stress or unhappiness in their new situations. Most often, this results from the company's failure to evaluate prospective teleworkers well enough before thrusting them into a telework situation. Feelings of inadequacy, distress, or uncertainty can escalate quickly into unhappiness and drastically lowered productivity when a teleworking program does not give a newly assigned teleworker a way to save face and return to a conventional commuting schedule.

Some of the most common difficulties for individual employees occur in the aftermath of poor training for telework. After a lifetime of working in a conventional office, almost everyone needs a little time to learn and develop the skills required to perform effectively in the new venue. When an employer

After a lifetime of working in a conventional office, almost everyone needs a little time to learn and develop the skills required to perform effectively in the new venue. When an employer does not provide adequate training, both the teleworkers and the employer usually suffer bad experiences.

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Robert Moskowitz is a business consultant based in Woodland Hills, CA, who writes frequently on productivity, office automation and technology.

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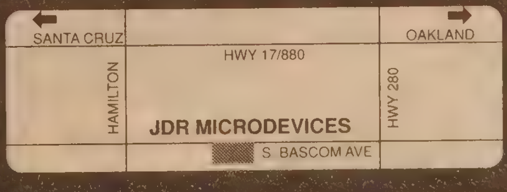


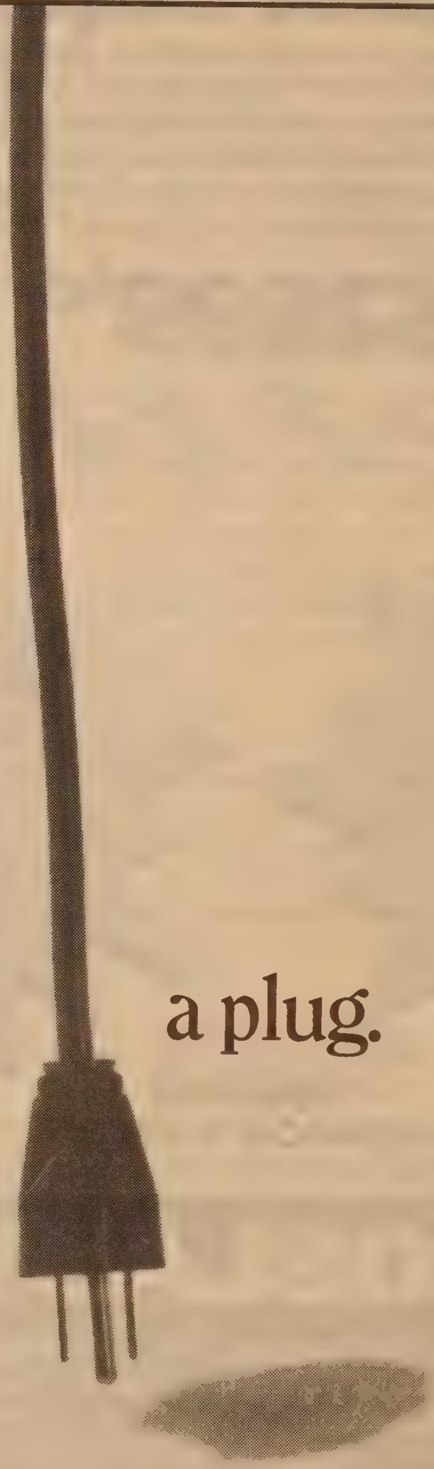
does not provide adequate training, both the teleworkers and the employer usually suffer bad experiences.

Fundamental training for teleworkers and their supervisors covers skills such as time management, setting goals, and consciously maintaining contact with coworkers and supervisors in the office. Many teleworkers also require training in the use of computers, faxes, modems, cellular phones, and other high-technology equipment. In the absence of proper training, they're almost helpless when out of the office.

Special career problems can also arise for teleworkers. In most companies with telework programs, teleworkers seem to remain as promotable as they were before. In fact, teleworkers often report they receive more and better recognition of their efforts than workers following conventional schedules. Some teleworkers consider their ability to work from home one or more days per week a form of reward and "promotion" they greatly appreciate. One reason is that the program gives them opportunities to learn new skills and increase their productivity. Also, these new skills tend to be highly visible to others in the organization.

However, no one can easily dismiss the lingering fear that being out of the office will put you out of the loop for new projects and for other well-earned recognition or rewards.

While telework does translate some commuting time into time with the family, it doesn't preempt the need to clock a full day's work.



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UNION RESPONSES

Although teleworkers generally appreciate the opportunity to cut down on commuting, their organized representatives tend to have widely differing reactions, ranging from indifference to strong opposition.

Some union representatives have tried to promote rules for telework programs that would select participants on the basis of seniority rather than personal preference and suitability, job type, work history, and other—clearly more relevant—criteria. One unexpected reaction from unions has been that telework unfairly favors a few job classifications by providing an easier commute and—more and more often—a posh workplace in a suburban telework center.

A few union representatives seem to fear the onslaught of telework, perhaps because it disrupts the traditional centralized workplace on which union organizing has long been based. But another, equally common fear is that telework can be part of a management strategy to convert full-time workers with benefits into part-time workers receiving lower wages and fewer benefits.

The biggest problems have occurred when union officials have declined invitations to attend early telework briefings and planning sessions. This may be a sign of early resistance, or it may be an oversight which later develops into opposition toward the telework program. In any case, the more closely unions and management work together in early stages of telework planning, the fewer problems tend to arise in that organization.

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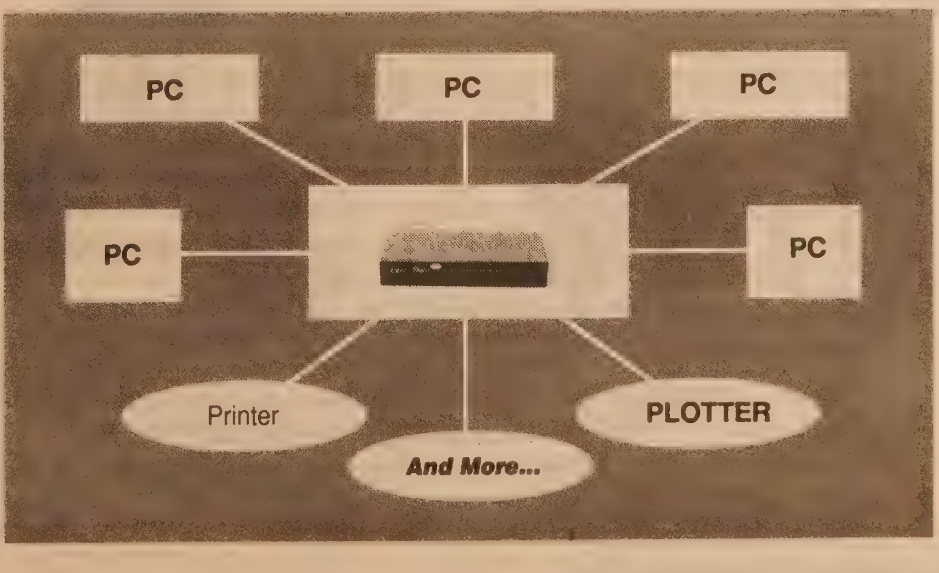

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ers than in most other nations, telework has generated no serious labor conflicts. Inside Nippon Telephone & Telegraph, for example, with union concurrence teleworkers are treated as though they are on business trips. This allows them to retain certain perquisites—such as commuting allowances—they might otherwise be asked to forfeit.

TECHNOLOGICAL INADEQUACIES

Fundamentally, successful telework requires only a telephone, a form of technology that is readily available everywhere people are likely to work in California. And cellular telephones, of course, can easily keep you in touch from deserts, street corners, and highway shoulders.

But in practice, many teleworkers are managers needing company performance data they can find only in the office computer, or programmers who are virtually shut-down when not connected to the office mainframe. Whatever their job descriptions, a large proportion of teleworkers tend to want or need a direct computer-to-computer connection in order to accomplish their most important work when away from the office.

Teleworkers often report they receive more and better recognition of their efforts than workers following conventional schedules.

This means that issues of compatibility between various combinations of computers and computer software can become major obstacles to teleworkers. Part of the planning for a telework program, therefore, should seek to ensure that data can flow to and from the distant workers easily and efficiently.

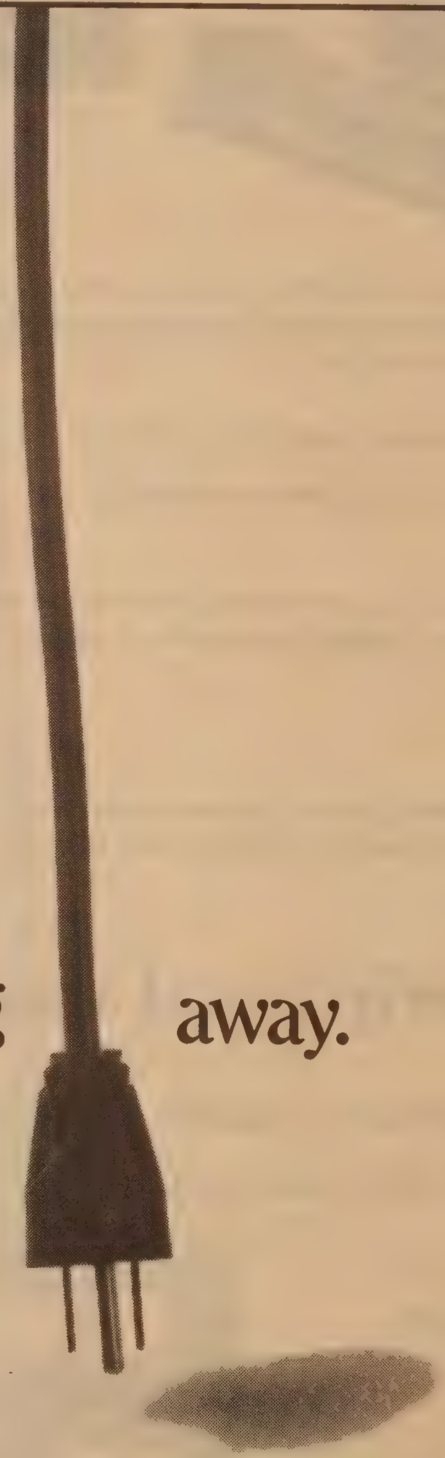
But communications is/are rarely free. For both telephone conversations and dial-up computer connections, the cost of keeping in touch with the home office can grow quite large. Attending a meeting by speaker phone, for example, can easily require 30 minutes or longer. And with relatively slow 2400 baud modems, it's common to spend an hour downloading a single data file. In Los Angeles, for example, a phone call to the home office—typically 20 or 30 miles away—can cost $12 to $20 per hour. At these rates, each teleworker can quickly run up a three-figure monthly phone bill.

There has been talk of fiber optic and ISDN telephone networks, but they are not much in evidence right now, and probably won't be for the rest of the decade. Telephone companies may offer some cost relief, but not much, and not always. These extra costs and difficulties must therefore be weighed against the savings that a telework program is designed to produce.

DATA SECURITY

The fear of precious data being lost or stolen is often a strong argument used against telework programs. Examples abound, such as the untimely security compromise—with the theft of a laptop computer from an open car in London—of General Schwarzkopf's battle plans for the Persian Gulf.

No one disputes that sending information over telephone lines or placing it in computers that will be used far from the home office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constitutes a serious data security risk. But before one allows this objection to scuttle plans for a telework program, one should consider the problem in perspective.

Organizations frequently have this same data readily available in printed reports that unescorted visitors can pick up from a desk and review or even copy without being challenged, reports that employees can carry out of the office without being trained in how to keep them secure. Full-time home-office employees often leave this same data lying around on clearly labeled computer disks subject to the same dangers, and leave computers and terminals tied into supposedly "secure" networks unattended and powered on, with the required passwords already entered.

Data security is a legitimate concern of telework program planners. But in most cases it should not make telework impossible, because the typical organization's data is exposed to no more danger through telework than it is from ordinary and well-accepted patterns of daily operation.

FAMILY AND HOME LIFE IMPACT

Frequently, both employees—and sensitive employers—will express objections to telework because they fear it will have a negative impact on family and home life. When the employee does not always leave home and go to work, the boundary between the two tends to blur. There are legitimate concerns about the potential for overwork, workaholism, and unwanted interruptions during meals and at all hours of the day or night. Leaving work "at the office" symbolically and practically encourages the employee to stop thinking about his or her job responsibilities. But when a telework program allows the work to "come home," there's a real possibility the employee will never entirely put away those responsibilities.

Employees and their families also worry about the added pressures that working from home will bring to family life. For example, the person working at home may feel some pressure to cope with a crying baby, do the laundry, run to the store for a bottle of milk, or lay the table for dinner. But while telework does translate some commuting time into time with the family, it doesn't preempt the need to clock a full day's work.

All this is less of a concern if the teleworker doesn't stay at home to work, but commutes to a satellite center in the neighborhood or works from a car while on the road.

A more subtle problem is that switching to telework one or more days per week may raise expectations and quality of life so high that the idea of going back to the old routine of daily commuting becomes unbearable, particularly for any little children in the family.

Although much of this article has covered problem areas in telecommuting, the facts lead to a positive conclusion.

With the experiences of teleworkers being carefully studied, we have a significant pool of knowledge on which to draw in assessing the potential problems and likely obstacles that may stand in the way of spreading telework options to others. This is an important development because organizations that begin to offer a telework option today generally experience the very same difficulties and must overcome the very same complexities as organizations which began offering telework a decade ago. By learning from these past experiences, therefore, organizations new to telework can plan a smoother path and improve the results they obtain from their teleworking programs. ■

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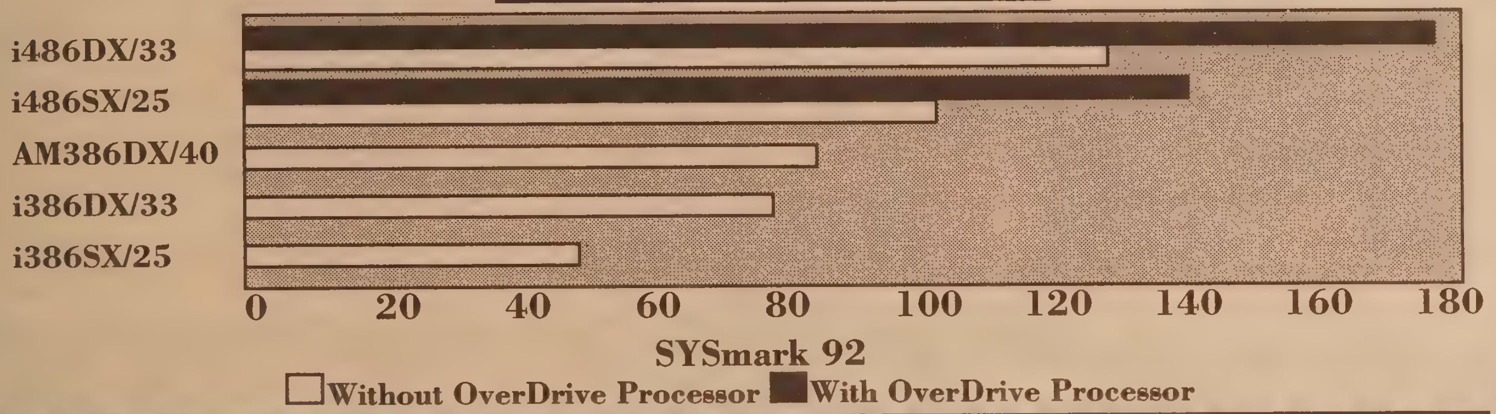

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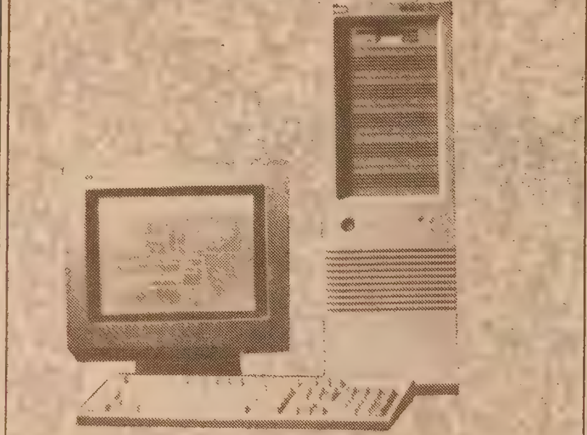

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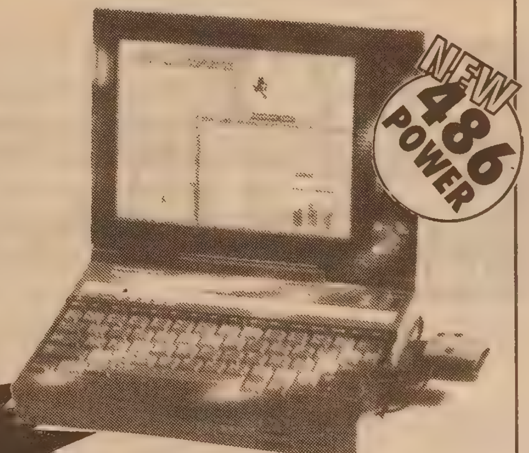

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Year-End Tax Planning

Take Advantage Of Software You May Already Own To Help Save Money At Tax Time

BY DAVID SIMON, CPA, AND JENNIFER ROBIN CHERNISS

Tax strategy for any taxpayer should be planned and acted upon throughout the year, and with particular awareness as the year closes. Year-end tax planning consists of executing financial transactions before the very end of the year in order to minimize taxes. As such, it's not something that just happens when your return is prepared, several months later.

The most important thing about year-end tax planning is that you have to act before the tax year ends (for calendar year taxpayers, by December 31) for transactions to be taken into account during that taxable year. A general principle of income taxation requires that each year be treated separately, so the difference between a transaction occurring December 31, 1992, and one on January 2, 1993, can be disastrous. In the case of tax planning, a day late can mean far more than a dollar short.

With the right computerized accounting system, the information that you need at year-end will be at your fingertips. Otherwise, you may be faced with the odious scramble of sorting out and making sense of your records, then making rational economic decisions—just when you were looking forward to enjoying that holiday dinner.

Consider the hypothetical situation of Amos, who recently retired and looks forward to living off his investments and occasional consulting contracts. The value of his shares in Microsoft have appreciated $100,000 but his stock in IBM has declined $100,000. If he sells both IBM and Microsoft in the same year, he can net his gains against his losses, reporting no income.

But if he sells Microsoft today, and IBM when he recovers from his New Year's hangover, all the capital gain from Microsoft would be subject to 1992 taxes, yet only $3000 of net capital losses can be deducted in 1991. Sure, he can carry over the IBM loss to 1993, but he would again be subject to the $3000 limit. At that rate, it could take Amos over thirty years to deduct all of his IBM losses.

The tax laws provide many such opportunities for individuals and businesses to secure tax advantages by executing transactions close to the end of their tax year—all requiring timely information. The more pieces of information you have from various sources, and the quicker you wish to analyze it, the more important is your computerized system for managing financial and accounting data.

INVESTMENT PLANNING SOFTWARE

Many personal accounting packages are suitable for certain aspects of individual tax planning. Such software categorizes receipts and expenditures and tracks investments. Quicken, by Intuit, and Managing Your Money are two inexpensive popular software packages. Both will track the performance of stocks, bonds, and mutual funds. They also link to personal tax preparation software, so you can automatically feed that data into your individual income tax return.

Suppose you buy the same security on various dates and at various prices. In computing gains and losses, Quicken simply assumes that the first share you sell is the first share you purchased. This is consistent with IRS regulations requiring that this convention be applied unless some other method of accounting is adopted.

MYM, on the other hand lets you identify from which layer (i.e., purchase date and price) the shares are to be sold. MYM also features a simplified tax planning module, updated annually, allowing "what if" explorations for the most straightforward investment transactions.

For those with more complex investment tracking needs, two programs to be considered are the Financial Navigator and Charles Schwab's The Equalizer.

Financial Navigator is a more advanced investment and personal finance package. It provides extensive investment analysis capabilities, including commodity transactions, limited partnerships, and depreciable property. It also includes a data bridge to transfer data to many professional tax systems used by CPA firms.

The Equalizer is designed to let you execute securities transactions by modem and it provides portfolio management. The Equal-

Continued on page 276

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David Simon, CPA (M.S., Taxation), is in tax and accounting practice in Oakland. His clients include a variety of professionals and businesses. He can be reached at (510)893-5753. Jennifer Robin Cherniss is a free-lance writer living in Berkeley.

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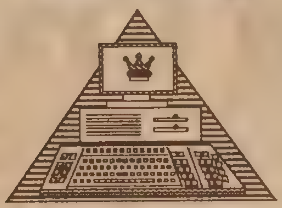

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486-50C ISA	662	904	1028	1258	1308	1358	1441
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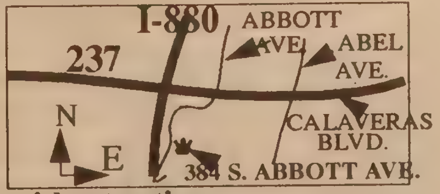

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Progress At Work In Santa Cruz

SCO Selects Progress 4GL And Database Management System To Help Manage Its Growth

BY MARSHALL SMITH

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Executive Park
Burlington, VT 01803
(617)270-9797

Progress Software is a major vendor of advanced software technology, yet outside of MIS departments, value-added resellers, and certain government agencies, it remains relatively unknown. The company develops and markets the PROGRESS Forth Generation Language (4GL) and Relational Database Management System (RDBMS). With total licenses for this product approaching one hundred thousand, Progress Software's days of semi-obscurity may be ending.

"I'll admit that in the past some of our value-added resellers have voiced a few complaints about our early lack of market visibility," explains David Smith of Progress Software. "Although we first started selling software in 1984, it wasn't until we went public in July of 1991 that we started getting appreciable media attention. The fact that Progress created the first software environment that allows developers and end-users to create and run distributed applications in the IBM AS400 environment definitely helped us get noticed."

In client/server architecture computing tasks are split between the PC working as clients and a server where the database resides. Progress Software differentiates itself from other relational databases by having the client do the majority of the work, which makes for faster requests for data from the server. This is true even counting a certain bottlenecking effect that comes with the use of networks. A recent agreement linking Progress software with Object Design Corporation's new object-oriented software database joins the two companies in a project to develop faster database software for the new generation of databases that contain not only numbers and text but also images and sound. This agreement marks the first time 4GL has been integrated with an Object-Oriented Database Management System (ODBMS). The joint product will speed the adoption of object technology in the business computing market by eliminating the need for traditional programmers and end-users to learn to write C++ code to access ObjectStore, the market-leading OBMS.

"We believe an object-oriented database provides superior capabilities for handling applications with complex, non-record-oriented data," explains John Wark, vice president of marketing for Progress Software. "We're definitely interested in speeding the development of object technology in the business world."

A major route to success in the software market for Progress has been packaging and marketing PROGRESS modules as separate products, giving the potential user the ability to buy only the capabilities that are needed for a particular installation.

Applications of PROGRESS range across the spectrum of business computing from accounting, advertising, and banking, to restaurant management, retail sales, and transportation.

Dale Burley, Director of Information Services at the Santa Cruz Operation (SCO), the leading supplier of PC-based UNIX operating systems, uses the MFG/PRO program developed by qad.inc of Carpinteria, California within the PROGRESS software environment to integrate its entire business computing system, which manages all company operations including accounting, manufacturing, and order entry. Burley explains how formerly SCO used a hodgepodge of computers and software for performing these tasks.

"We had a total of eleven computers, with eleven datasets. Interdepartmental integration was minimal. With a rapidly growing flow of new business, we needed a leading-edge solution. We had too many databases, each with their own system, and with little integration. Aside from Progress, our heterogeneous databases included SCO Integra and Informix. Our homemade order management application passed orders to manufacturing via flat files. We had been putting our order entry into our cobbled-together order processing systems, then exporting it into MFG/PRO. Concurrent with that we would send it to the accounts receivable system so shipping would tell them the product was shipped and that it was time to bill the customer.

"We were rolling the order entry data to three different systems and had three different sets of customer files. When the customer would change the order it was a nightmare to synchronize those three activities. If manufacturing wanted to access the manufacturing database to query against yesterday's sales orders, we had to physically transfer copies among the databases. And those databases were query only, which caused a tremendous bottleneck. This bottleneck was aggravated by too much administrative work and non real-time access. What access we had was limited. Because we had networked PCs, there's a limit to the number of concurrent accesses that can be supported. When our consultants offered us PROGRESS 6.1 with MFG/PRO distributed applications, we took the opportunity to consolidate all those dis-

In client/server architecture computing tasks are split between the PC working as clients and a server where the database resides. Progress Software differentiates itself from other relational databases by having the client do the majority of the work.

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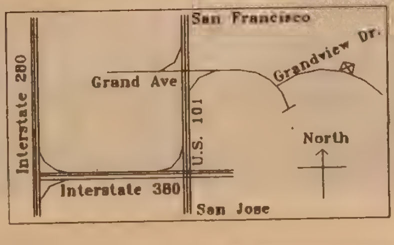

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parate databases into a coherent system.

Burley explained how the new system allowed much easier tracking of data. "With MFG/PRO there is only a single instance of a sales order being entered. All departments then have access to that information. This gave accounts receivable notification of those customers who were delinquent but needed new orders, and they could then reconcile those accounts and keep the customers satisfied.

"When the decision was made to bring all data into MFG/PRO, SCO experienced a few bumps in data conversion," explained Burley, "mainly due to multiple DBMSes and different table formats." In order to make the task more manageable SCO decided to establish boundaries in which they wouldn't convert any data over two years old. "This was a big help to us," noted Burley, "since it made less history to drag over into the new environment, but it still meant converting tons of data because we're growing so fast that the last two years of data represents 80% of the total business we've done. Since we had different databases, we were working with different data. It was like apples and oranges. Duplication and data migration is always a factor in such a situation, and it took lots of massaging to end up with one data set. I'd describe this process as part analytical, and part intuitive."

An agreement linking Progress software with Object Design Corporation's new object-oriented software database joins the twocompanies in a project todevelop faster database software for the new generation of databases that contain not only numbers and text but also images and sound.

Burley went on to explain how SCO managed to do most of the data conversion inhouse. "We had a few consultants for special programming tasks and for an extraordinary amount of concurrent programming at the end of the implementation. It turned out that much of the customization we'd done to MFG/PRO 4.0 turned out to be embedded in version 6.0, making the transition that much easier. Ninety-eight percent was done by us, augmented by some very knowledgeable consulting from qad.inc. They gave us many helpful hints. The development process started in January 1991 and implementation was done by August 1991."

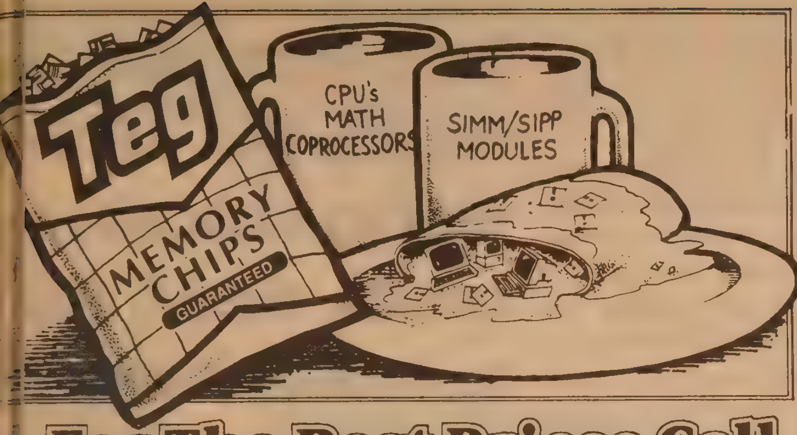
Dale Burley explained how running a rather complex number-crunching program like a Material Replenishment Plan (MRP) was speeded up after the installation of MFG/PRO. The MRP is important for manufacturing, as the program monitors remaining stock and tells how much of any particular item is left.

"It used to take us thirty-six hours to run our MRP," says Burley. "It left us little margin for error since our time was constrained. Following the installation of MFG/PRO, MRP declined to about six hours—several orders of magnitude better. It made life much easier at SCO. Gave us more time for data processing. If we encounter a problem, we have time to start MRP over.

Other benefits of the Progress Software upgrade include much less guesswork and allows better management of available resources. "In general there were fewer peaks and valleys," says Burley. "Fewer surprises. It allowed us better management of available resources."

The Santa Cruz Operation runs Progress Software and MFG/PRO across three of DEC's latest 433 MP Intel-based systems, which feature three 486s in each box with 64MB RAM. Each system has five 470MB disk drives totaling several gigabytes of storage each. These run SCO MPX 2.0 multiprocessor version of SCO UNIX.

Burley talked about what technologies SCO was planning to use in managing projected growth. "The upgrading of our client/server architecture is a major project. That's where we can improve our customer's operations significantly. MFG/PRO 7.0 will help us meet that growth with its new client/server features. Progress software runs very stable on SCO platforms and we've been very comfortable with them. By integrating SCO UNIX with MFG/PRO, we're confident we'll achieve true client/server operations, not just the distributed file servers that comprise much of client/server today—but distributed databases and distributed processing too. Also, the increased power of Intel's chipsets is a factor, especially with the i586 coming on top of the i486. The increased price/performance leads customers to run PC-based applications un-



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der SCO UNIX that previously required a workstation, and in some cases a minicomputer. Most of the major hardware vendors maintain close relationships with SCO. We have a dedicated Engineering Services group to ensure our solutions run well on all major platforms, and to leverage us into the OEM market.

"We see MIS departments evolving from 3GL environments such as C, Fortran, and Cobol to 4GL's such as Progress, in which they can do more analysis and less programming. Manufacturing, for instance, wants someone who understands manufacturing, not just programming. The model is shifting, and CASE applications are helping that shift.

"One extensive change we're noticing more is the prominence of distributed processing, as opposed to the traditional hierarchy of dumb terminals, "sneaker net," and mainframes. That manner of operations was vertical, not horizontal. Today, companies' organizational structures are flatter, not pyramidal. Overall, this has been called a paradigm shift since it's altered the underlying pattern or context in which business is conducted. Related to this is empowerment of the workforce by driving decision-making down in the company, and mini-companies of factories within factories. In general, it's more of an entrepreneurial way of doing business, with fewer corporate traditions. That helps companies like ours be more innovative in technology, and more responsive to their customers.

Today, companies' organizational structures are flatter, not pyramidal. Overall, this has been called a paradigm shift since it's altered the underlying pattern or context in which business is conducted

Burley addressed the continuing spread of UNIX in the world of business data. "Commercial UNIX is enjoying very strong growth, especially in such areas of the service sector as lodging and hospitality, and in large retail operations on the scale of Sears or Wal-Mart. Bar code technology, scanners, and related types of automatic identification are capturing massive amounts of data at the point of sale, and companies want to use that data for marketing, inventory control, and the like. The major corporations with international operations are seeking solutions based on standard technologies, such as X Windows, OSI, ISO 9000, and the like, which leads them to specify UNIX for interoperability across continents. These companies treat information as a competitive advantage.

Progress Software is planning on the portability and compatability of its software to keep the company in the forefront of the expanding international market, working across a wide spectrum of platforms, including not only UNIX but also DOS, OS/2, Windows, NLM servers, and even older operating systems such as the BTOS/CTOS from Burroughs, which is still in relatively wide use at government agencies. With its development of advanced object-oriented databases, Progress Software hopes to furnish a bridge from the old to the new in the world of database software. ■

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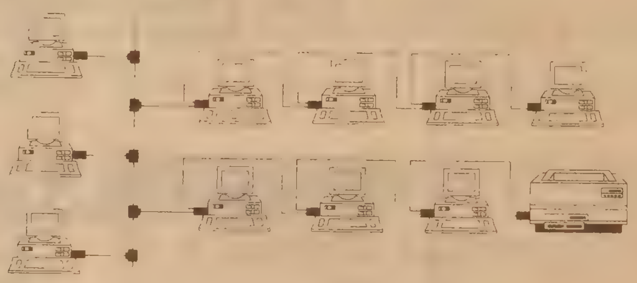

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Should Your Business Choose Windows

Trying To Decide If You Should Convert To Something More Elaborate Than DOS? The Answer Is Not Necessarily

BY ROBERT MOSKOWITZ

In the world of fashionable computing, the press, the stores, and the consultants remain all abuzz with talk of Microsoft Windows. To the casual observer, it may almost seem that Windows is the only sensible choice for a small business trying to initiate or expand its use of computers.

But let's be honest: Nearly two years after the advent of Windows 3.0 and the immediate avalanche of favorable opinion, computer users continue to purchase far more software for DOS than for Windows. What's more, sales of Windows-competitive operating systems and operating environments continue to climb.

One very unfashionable reality helping to keep these other products alive is that Windows is neither necessary nor practical for many types of business computing. To run quickly and efficiently, Windows requires a 386 machine with 4 or even 8MB of RAM, instead of a 286 with just 1 or 2MB. Each Windows application tends to take several megabytes of disk space, so you generally need a bigger, faster disk, as well. And the whole thing requires a VGA or Super VGA display. That's $1000 or more worth of hardware you don't need if you take some other approach.

Another often ignored factor is that each of Windows' competitors can outperform it for certain business chores. In fact, I use Windows, but I've stopped using many versions of software for Windows because I find them slower and more cumbersome to use than their counterpart versions for DOS. With nearly two years of operating experience to look back on, hardware and software buyers are still demonstrating with their dollars that Windows is far from perfect. In fact, for a wide range of business situations other alternatives make better sense.

WHAT ARE WE LOOKING FOR?

As you probably know, Windows 3.0 and 3.1 are not true operating systems, like DOS. That is, they don't control and interact directly with the computer hardware. Instead, they concentrate on providing the user's and the software's "operating environment" which, in turn, interacts with the operating system that actually controls the computer's hardware.

The competition includes other operating environments that directly replace Windows, playing the same role in your computer. There are other alternatives that eliminate the need for anything like Windows. For many years before Windows ever came on the scene, computers performed very well with just operating systems. So if you don't want an "operating environment"—Windows or any other—you don't need one at all.

> **Sales of Windows-competitive operating systems and operating environments continue to climb.**

The reasons Windows has become so popular include the following:

- Windows allows a computer to support more than one software program at a time. This "multitasking" capability makes the computer more useful and eliminates frustrating delays while a single program is processing data.
- Windows provides a graphical user interface that makes it very simple to give the computer commands by pointing and clicking with a mouse instead of typing on a keyboard. Many people feel strongly that the DOS approach requires too much thinking, remembering, and outright effort from the user.
- Windows establishes a very strict set of rules for how programs must operate, so programs designed for Windows all look, feel, and run pretty much the same way, including their online Help. If you can run one Windows program, you can quickly learn to run them all.
- Windows 3.1 provides some advanced data-handling features, like automatic data transfer between two different applications, easy "cut and paste" from one window to another, and simplified "what you see is what you get" formatting and printing.

Many developers have offered their "top of the line" programs for Windows rather than DOS. People who feel they must have the latest versions of software are discovering they must also have Windows.

But all these advantages, while great, have not been enough to knock the competition out of the race for installation on business computers.

ALTERNATIVE PRODUCTS TO CONSIDER

Windows' competitors include a range of products capable of supporting a business-oriented computer system.

Because of its unprecedented popularity, Windows (with its required copy of DOS) is the baseline against which other alternatives must be measured. You may be interested to know that Microsoft is promising a more advanced version of Windows, called Windows NT. This is not an upgrade, but a true operating system that does not require DOS, and thus invites comparison with OS/2 and UNIX. But Windows NT is not proven yet.

DOS

DOS (Disk Operating System) is the time-honored product from Microsoft that came along with IBM-compatible computers into

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Robert Moskowitz is a business consultant based in Woodland Hills, CA, who writes frequently on productivity, office automation, and technology.

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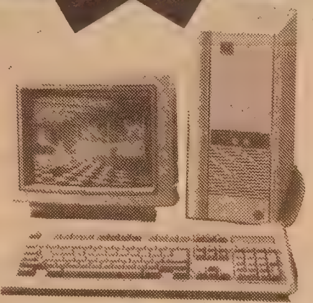

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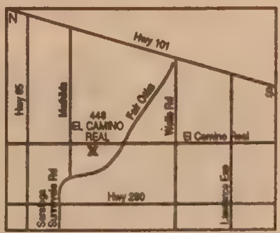

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the business world. In its various versions and upgrades, more than fifty million copies of this product are now in use worldwide. Other vendors are now out-DOSing DOS, offering advanced features—including multitasking—in a product that directly replaces the Microsoft version of DOS.

With tens of thousands of applications available for DOS, you're fairly certain to find DOS capable of supporting the software you need. If you are trying to decide if you should convert to something more elaborate, the answer is not necessarily.

DESQVIEW WITH DOS

DESQview is a well-established operating environment that provides many of the advantages of Windows without the graphic interface, or its associated hardware expense and processing overhead. Promoted nowhere near as heavily as Windows, DESQview is inexpensive yet slick. DESQview is to Windows what end-zone seats are to sky-boxes: You see the same football game, only the amenities are different.

OTHER GUIS WITH DOS

Other vendors have been busy offering the same sort of product as Windows. GeoWorks is a windowing "environment" that works with DOS, and offers some of the same capabilities as Windows. But it doesn't really have the variety of powerful applications or the multitasking power to compete in the world of business.

NewWave is a true competitor of Windows, except that it is mainly offered through computer manufacturers who place it on their computers, rather than through retail stores where end-users could evaluate it and choose it or Windows, as they prefer.

UNIX

A very proven, powerful, and flexible operating system, UNIX now includes a graphical user interface that compares very favorably with that in Windows and OS/2. UNIX has a long history of supporting the most powerful business applications of any operating system. But like a distant relative who is misunderstood and feared, UNIX is to DOS with Windows and to OS/2 what time-shares are to real estate ownership. Plenty of people rely on UNIX, but until you experience it first-hand you don't really know what to expect or whether it's trustworthy.

OS/2 2.0

From IBM, this is the newest operating system to enter the market. It incorporates the most advanced technology and is certainly the one with the most potential power. Yet OS/2 requires even more computer resources than Windows, and so far has fewer applications available for it. In years to come, we may all be using OS/2. But as of today, it hasn't shown itself to be any more right for everyone than Windows.

BUSINESS CONSIDERATIONS

The main reason these other products have continued to find growing markets and retain loyal users is that they work—sometimes better than Windows. The end-user market seems to have ignored the hyperbole, made up its own mind and decided that other considerations count as much or more than the advantages and attractions of Windows. These include, in rough order of importance:

- software availability
- multitasking
- computer response times
- graphics
- ease of use
- cost of the hardware and software system
- longevity
- potential for custom software development

Here's a brief rundown of these factors to help you begin to evaluate whether Windows or another approach is best suited to your situation.

The software available and the work to be done: This is almost certainly the single overriding consideration in selecting an operating system or operating environment. Windows—or any other such product—does you no good if it won't support the one application you absolutely need for your business.

If the specific tasks to be done on the computer system call for an application that runs only on Windows, or OS/2, or DESQview, or DOS, or UNIX, your decision is already half made.

The need for multitasking: Most businesses benefit from multitasking. It allows you to start a long print-job, for example, and still enter the day's sales orders on the same computer. It also means you can leave several applications up and running, and quickly switch between them to computerize the various chores that come up during the day.

But multitasking is separate from Windows and even from the idea of a graphical user interface. You can easily get many DOS programs to multitask using DESQview, OS/2, or UNIX. Digital Research's version of DOS also provides for multitasking.

People who were eager to do multitasking on an IBM-compatible computer rapidly embraced Windows 3.0 when it first emerged, as the best practical solution. But we now recognize that for some business situations there are easier ways to obtain the same capabilities.

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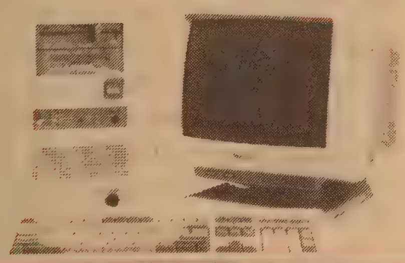

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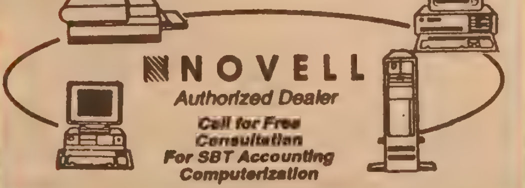
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Computer response times: Environments produce slower responses than simpler systems. That's why most DOS versions of applications run much faster on a given computer than Windows versions of the same applications. This is also true—although hardly noticeable—on the fastest 486 systems.

When you decide how to outfit a computer, therefore, it's only sensible to take into account whether or not you really need the features that are inevitably going to slow down its response times.

The need for graphics: Computer graphics include both the graphical user interface and the ability to produce and display business graphics—charts, drawings, and other attractive presentations of data. More and more businesses are incorporating these graphics into their printed and on-screen materials because it looks great, calls attention to important matters, and adds prestige and credibility at a relatively low price.

But both forms of computer graphics absorb a tremendous amount of processing power. Windows is far slower to respond than DESQview, for example, even with extra computer memory installed. One solution might be to centralize graphics on one computer, leaving the other computers free to support less attractive but faster text-only operations.

The need for ease of use: A big advantage of Windows' and OS/2's graphical user interfaces is that they make compatible programs so easy to operate. With a few minutes of training, people can learn the basics, and from there, can often teach themselves how to operate other programs.

But there's a down side to this. Experienced users often feel graphical user interfaces are slow and tedious. With few shortcuts provided, frustration—caused by repeating the same ten easy steps over and over and over again hundreds of times, and by manipulating that mouse in the tiny movements often required—can rise very high.

The acquisition cost of the hardware and software system: As mentioned, more elaborate operating systems and operating environments require more expensive computer systems for a given level of performance. While the cost of the hardware (and the software) is generally quite small in relation to the value of the data and the people-hours spent using the computer, the initial price tag can still be a formidable consideration.

Longevity: In a business, the operating system and/or operating environment must pay for itself over its useful life. If the software will become obsolete fairly soon, it'll have to provide much greater benefits to pay for itself while it remains useful. Thus, considerations of how long a service life to expect are an important part of any acquisition decision.

Potential for custom software development: This is not a consideration for all, but more and more businesses are finding they need some measure of customized software to accomplish their data processing requirements. Software development is a highly technical discipline, and assessing the potential of particular operating systems or operating environments should be left to the experts. But if you think you may need customized software in the future, get an expert's opinion on the products you're considering.

Clearly, there are many factors to consider, and no one is suggesting that Windows is a fake, or a waste of time. Instead, it's simply important to notice that other operating environments and operating systems—alternatives to Windows—continue to find large and growing markets. If you give them a fair look, you may find one or more of these products meets your needs for business computing quite well. ■

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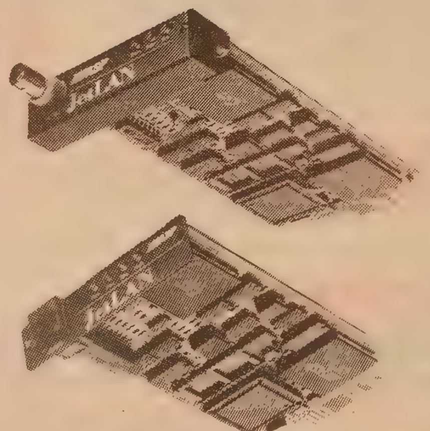

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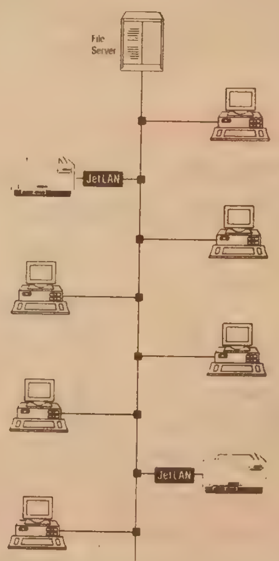

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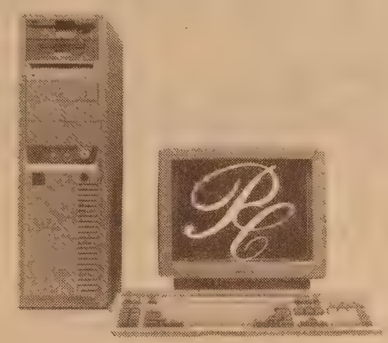

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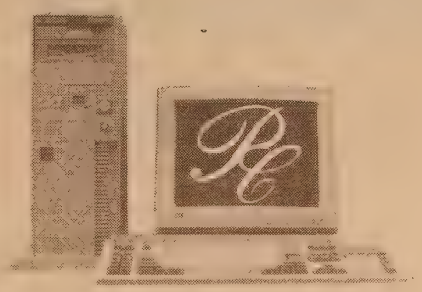

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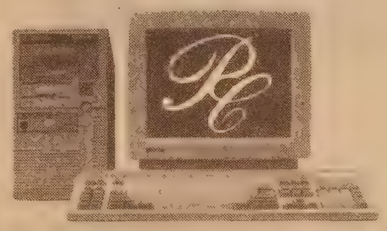

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News From The Trade Shows—

PCMCIA And The Network

BY YACCO

One of the big stories at NetWorld and Interop this year was the PC Card network adapter. These cards adhere to the latest standards from the PCMCIA (Personal Computer Memory Card International Association): PCMCIA 2.0 (or maintenance release 2.01), Socket Services 2.0, and Card Services 2.0. This is the first set of standards for credit card adapter and memory products that provides compatibility for a broad range of products. Many adapters based on it have already been announced.

ANNOUNCED PRODUCTS

Xircom, for example, has shown its CreditCard Ethernet Adapter, which will initially be available in 10BaseT during Q1, with a Thinnet version following a month later. Xicrom's design is as elegant as PC Cards get: Type I, with no external component. (At 3.3 millimeters, Type I cards are the thinnest design in the specification.) There's still no announced availability date or price, but the CreditCard Ethernet Adapter will probably be priced close to the Xircom pocket models (currently at $399).

LOCAL AREA NETWORKS

National Semiconductor and IBM have jointly developed designs for Ethernet (10BaseT and 10Base2) and Token-Ring adapters. Each consists of a PCMCIA Type II (5.0 millimeter) PC Card, and an interchangeable external media coupler. The media coupler is a six-inch-long cable with a special 15-pin I/O connector on the card end, and an integral media interface on the network end. In terms of volume, the device, including status lights, is between two and three cubic inches.

The National Token-Ring PC Card is available for OEM evaluation at $795. Ethernet versions are currently shipping in volume to OEMs with pricing at $144 each in quantities of one thousand. National also plans to make chip sets available, and to license their designs. So, you can expect prices of these adapters to keep pace with market dynamics.

D-Link has introduced a Type II PC Card with connectors for either twisted pair or Thinnet. (It may offer AUI in Q1 if there's a demand.) The $395 adapter includes one transceiver of either type, and a second transceiver can be had for an additional $150. In Q4, D-Link will offer a combination transceiver for the same price ($449 for a complete combination unit).

Thomas-Conrad will offer its Type II PCMCIA adapters for Token Ring and Ethernet in Q4. Both feature an external transceiver. Its $779 model TC4041-STP Token-Ring TC-Card is switchable from 4 to 16 Mbps. The company claims the adapter runs over Type-I shielded twisted pair with performance equivalent to 16-bit ISA adapters. A model TC5041-T 10BaseT TC-Card is $359, and a model TC5041-2 Thinnet card is $375. The Ethernet models are identical except for their external media access modules (transceivers).

PROXIM'S RANGELAN

Proxim is introducing not just a network adapter, but the RangeLAN PCMCIA network interface card. It's a PC Card version of Proxim's wireless spread-spectrum RangeLAN, a proprietary network that runs NetWare, Lantastic, NetWare Lite, Windows for Workgroups, and LAN Manager. The Type II PC Card version of RangeLAN interoperates with the full Proxim line of ISA, Compaq-notebook, and parallel-port adapters. It's expected to ship in December with pricing at the same $595 point as other Proxim adapters (except ISA: $495).

RangeLAN transmits up to 800 feet between nodes, at a sustained rate of 242Kbps, without a cable. According to Proxim chairman Raymond Chin, that's fast enough to support the technology's targeted applications: peripheral (printer) sharing, email, light file sharing, shared client-server databases, and terminal emulation. It's being used in forklift-mounted inventory control, in emergency

> **With RangeLAN, Proxim's Raymond Chin explains, "People can get portable wireless communications without changing their applications. We've targeted applications that require high reliability and significant range, and we had to have a small form factor with low-cost and low-power requirements."**

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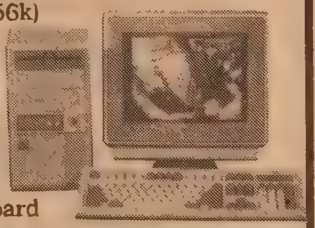

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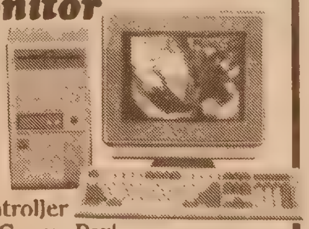

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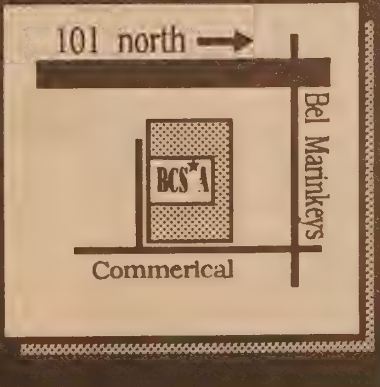

rooms and at bedside for patient data-capture and access to treatment databases, at restaurants and at service counters (by Canadian Airlines for example) for in-queue scheduling and reservations, and at retail outlets (such as Tandy's superstores) for in-aisle sales that close the deal before a buyer can change his or her mind. (Tandy's GRiD division is a RangeLAN OEM. So is a $250 million company that provides handheld terminals for inventory control.)

"Users are just starting to explore the technology in depth," says Chin. "Over the next one to two years we expect to see rapid growth as the marketplace learns the benefits of wireless technology."

With RangeLAN, Chin explains, "People can get portable wireless communications without changing their applications." PCMCIA was an obvious way to extend this goal to extreme miniaturization. "We've targeted applications that require high reliability and significant range," says Chin, "and we had to have a small form factor with low-cost and low-power requirements."

He suggests that competing wireless designs may not be able to operate from the power available in the PCMCIA standard, and clearly hopes to benefit from Proxim's implementation. "I think that this form factor will become the prevailing form factor for portable computers including notebooks, subnotebooks, pen-based machines, and handhelds," says Chin.

PCMCIA: EMERGING STANDARDS AND APPLICATIONS

PCMCIA is hot. PCMCIA executive director Brendan McGuire claims "At the PCMCIA Gallery at COMDEX, you will see over forty member companies' products. You will see a minimum of fifteen to twenty systems at the exhibit. I've seen over thirty systems myself."

Some insiders expect as many as fifty mobile computer models (notebook and handhelds) with PC Card slots to bow at COMDEX. Proxim's channel sales manager Tom Mitchell says, "Everybody except Compaq is going to be showing it." There's even a company due to introduce an expansion chassis for the Apple PowerBook at this year's COMDEX: just one more sign of an even bigger PCMCIA story.

Some insiders expect as many as fifty mobile computer models (notebook and handhelds) with PC Card slots to bow at COMDEX. There's even a company due to introduce an expansion chassis for the Apple PowerBook at this year's COMDEX.

As these systems sell, they will spur yet

Continued on page 287

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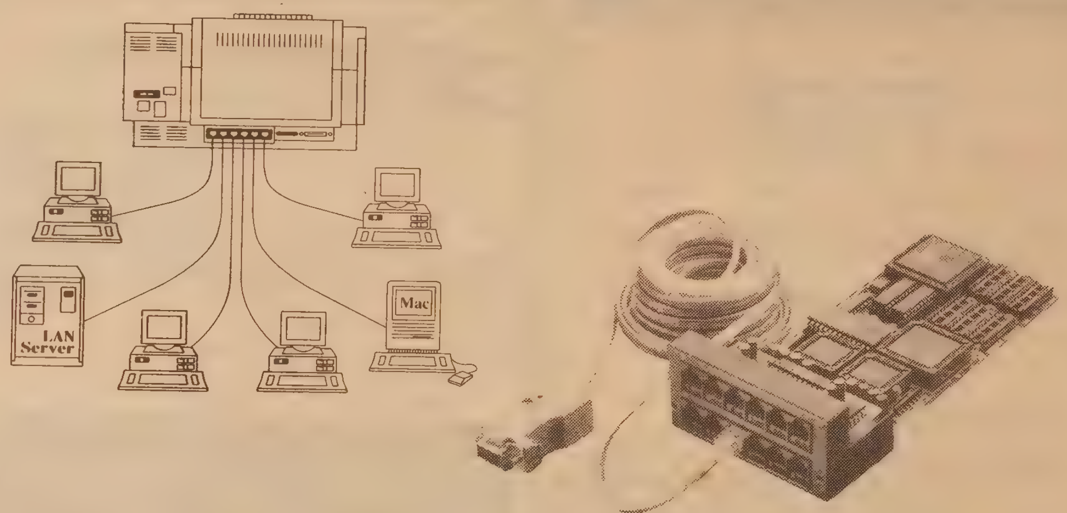

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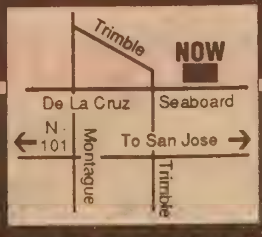

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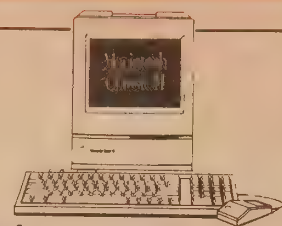

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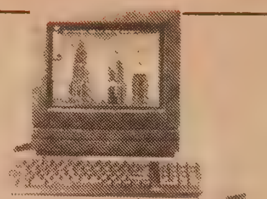

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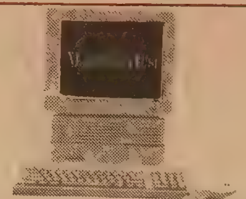

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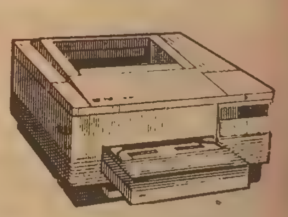

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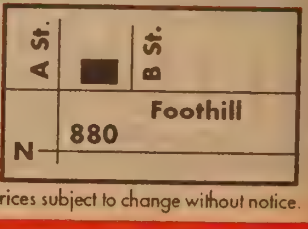

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Asynchronicity

Speed Vs. Integrity, And Other Tradeoffs

BY BENNETT FALK

UNIX

The word "asynchronous" has become an important part of the computer lexicon. Like the important parts of any lexicon, it is a difficult word to use properly.

If you read around a bit, you will probably find lots of things that are described as "asynchronous" in some fashion or other. Serial ports, for example, are often referred to as asynchronous lines. "Asynchronous" is also used to describe the way some computers read and write from disks, and it could as easily be a characteristic of remote procedure calls (which are, in themselves, another troublesome part of the lexicon).

In the most general sense, something is asynchronous when it doesn't have to wait for the completion of one task before beginning another. Think for a second about talking to someone on the telephone: about the only thing that prevents both parties from speaking at once is courtesy. There is nothing about the phone connection that forces the listener to wait for the speaker to finish before responding.

THE ASYNCHRONOUS SERIAL INTERFACE

In the computer world, what happens over a serial interface is very similar to telephone communication. One pin on a serial connection is reserved for sending data, another pin is used for receiving data. Devices connected over a serial interface have the opportunity to send and to receive at the same time; the receiving device doesn't have to wait for the sender's transmission to end to respond. Protocols (like XON/XOFF) for managing the orderly transmission of data would not work otherwise.

(Parallel interfaces, by contrast, are usually synchronous: data can be transferred across a parallel interface in only one direction at a time, and the receiver has to wait for data transmission to stop before it can return data to the sender.)

Copyright © 1992 by Bennett Falk. All rights reserved. *Bennett Falk lives in the Bay Area, writes when he can, and hopes for the best. He works for Sybase, but the opinions and attitudes expressed are his own.*

The asynchronicity of interfaces is a good, simple instance of asynchronicity in general. It's simple because all the interface cares about is sending and receiving data, and once we agree to ignore everything but sending and receiving data, being asynchronous just means being able to send and receive data at the same time. The fundamental reason to do anything asynchronously is to save time.

Even in this simple example, however, asynchronicity introduces some complexity, some uncertainty that isn't present in synchronous communications.

The whole business of getting data from one device to another takes time: a device sending data over an asynchronous interface can never be completely sure what state the receiving device will be in when the data arrives, or what data is already in transit from the other end of the interface. In general, the increased throughput more than compensates for the indeterminacy that asynchronous communications introduce.

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ASYNCHRONICITY AND THE DISK

All of this gets more complicated when it's extended to things like reading from and writing to disks.

Anyone who learned to program in BASIC was introduced to the notion that a computer program is a sequence of steps executed in order. If you think about programs this way, it is not difficult to assume that when a program reads something from disk in line 110, it will probably need to do something with that data in line 120, and it makes no sense to continue execution until the requested data has been read from disk.

In general, programming languages reinforce these assumptions. The "read" call in C, for example, doesn't return control to the calling program until the read is complete.

Input/Output operations done this way are said to be synchronous. As with sending and

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receiving data over serial lines, disk operations take time, and the execution time of a program that does synchronous I/O will include all the time spent interacting with disks.

Now imagine that it is possible to write programs in such a way that some meaningful work can be done by the program while a disk operation is pending. Within some very broad limits, the program doesn't care when the I/O completes.

When such a program issues a request to read data, control returns immediately to the program after the request is made. The disk read itself may not finish for several milliseconds, so the program continues execution doing whatever it can without having the results of the disk operation. Eventually the read completes, and this is communicated (typically via a signal) to the program, which is then free to use the newly read data.

A similar scenario could be constructed for writing to disk. The program would issue a call to a routine to write to disk asynchronously. Control would immediately return to the calling program.

On most versions of UNIX, an effect similar to asynchronous disk accesses can be produced by performing synchronous reads and writes against a buffered disk (files in a UNIX filesystem, for example, or an intelligent disk controller).

Although the effects are similar, the buffered I/O strategy differs from that of asynchronous I/O: the gain in performance from buffered I/O comes from delaying the write to disk as long as possible, and this delay may put the data at risk.

Asynchronous writes typically do not delay the disk access: a call to an asynchronous write routine will start the write operation and return control to the caller immediately.

But the performance improvements offered by asynchronous disk operations come at a cost. As with asynchronous serial lines, a measure of uncertainty is introduced when disk operations are performed asynchronously.

In the case of disk operations, however, the data requested by the controlling program is not completely indeterminate: the program knows how much data is to be read and may know quite a bit about the content of that data before it arrives. Asynchronous reads and writes are not inherently more disorderly than their synchronous counterparts.

The true cost of using asynchronous operations to get better performance can be reckoned in two areas: data integrity and failure recovery.

In environments where large numbers of reads and writes are being performed asynchronously, there is a need to manage the sequence of reads and updates so that each program sees accurate data and no updates are lost.

Asynchronicity is a viable strategy for making programs run faster, but the faster the program runs, the more difficult it is to determine its actual state at any given instant.

Disk accesses can be performed asynchronously, but if the data on the disk is, for example, an accounting system, the transactions in the accounting system have to be posted in order. The logical operations on the data must be synchronous even though the program's interactions with the underlying hardware are not, and the burden of ensuring the logical integrity of the data adds yet another layer of complexity to application programming.

Recovering from the failure of an asynchronous disk operation is also fraught with peril, because the events being coordinated are very small and happening very fast. If an error occurs while reading or writing from disk, it may not be possible to restore the context of the program at the time the request was first issued, and the program itself may need to make more complicated decisions about how to respond to failed disk operations.

At work in all of this is an economy of sorts. Asynchronicity is a viable strategy for making programs run faster, but the faster the program runs, the more difficult it is to determine its actual state at any given instant. As programs are split into components that run asynchronously, it is not hard to imagine that repeated executions of the same program will be different, that the sequence of events the program triggers will change subtly from one execution to another.

The variability of what happens at runtime in an asynchronous environment may not seem like much, but if you can't rely on software to do the same thing every time, what can you rely on? The modern world does not offer many places of refuge for determinists. ■

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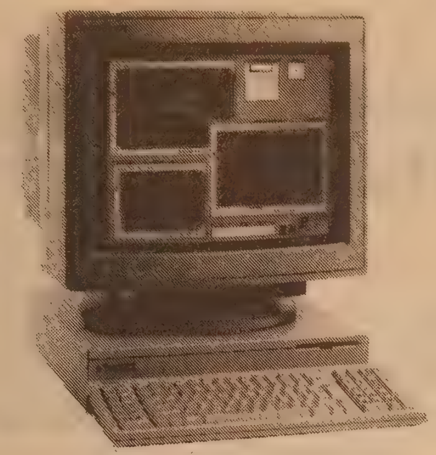

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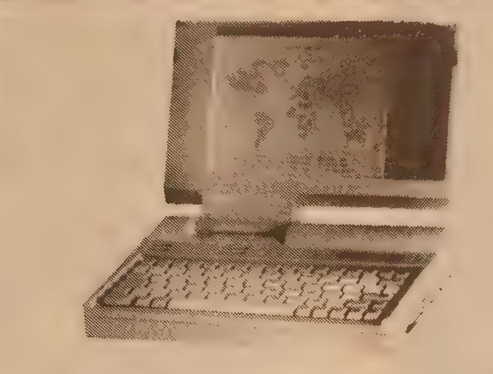

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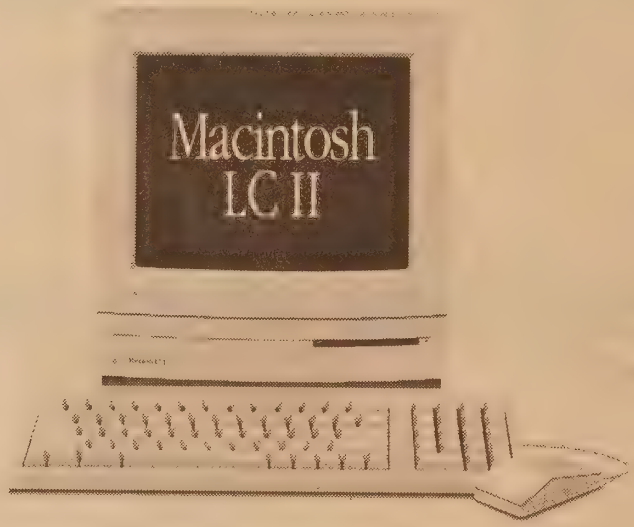

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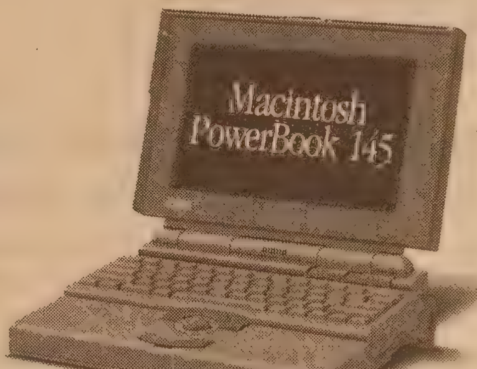

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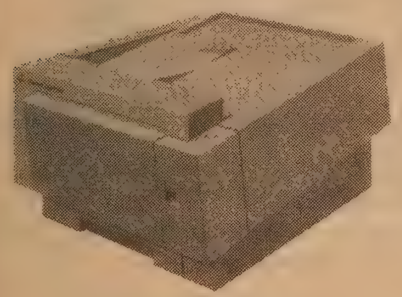

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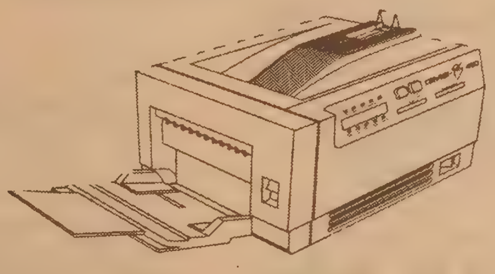

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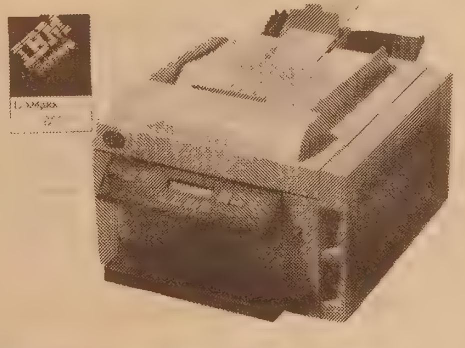

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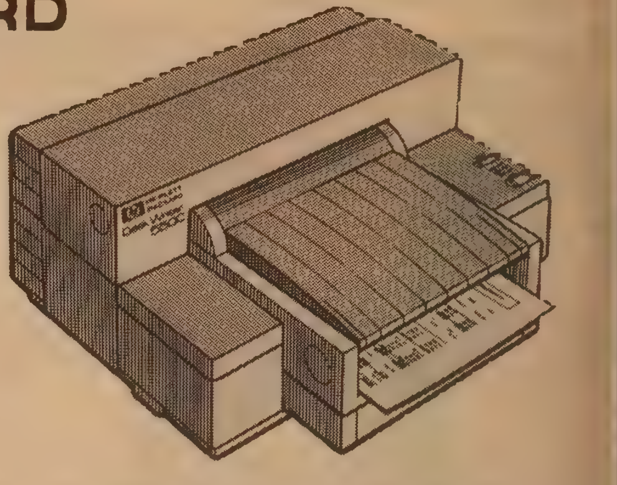

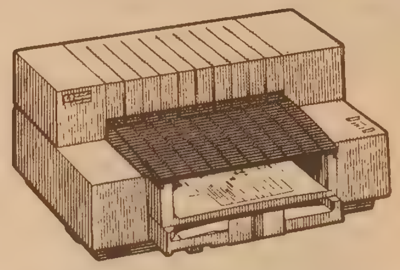

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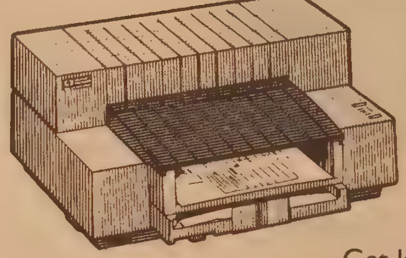

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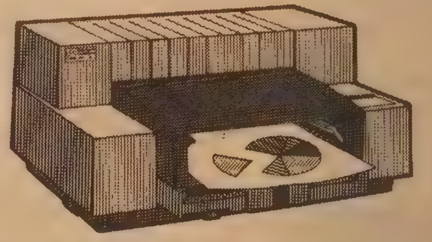

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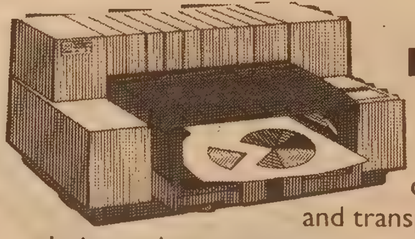

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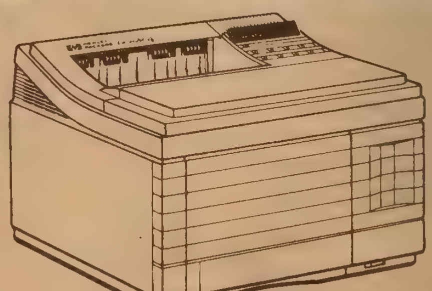

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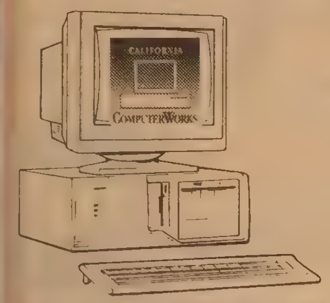

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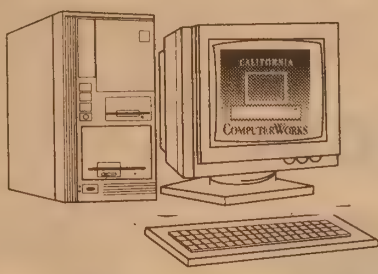
- DOS 5.0
- SVGA w/512k video memory
- 200 watt power supply
- 2 MB RAM
- McAfee Antivirus
- 3-1/2" & 5-1/4" drives
- 101 keyboard
- Power Menu

# CCWSCA0014

Monitor Extra

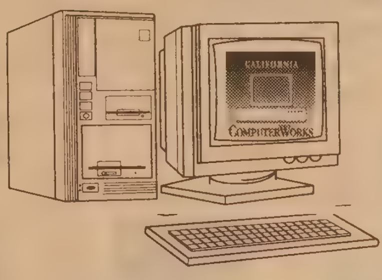


$999.
Color Monitor w/40 MB HD

486SX-25 MHz Mini-Tower Complete System

- 1-year depot warranty
- DOS 5.0
- 1 MB RAM
- 101 keyboard
- McAfee Antivirus
- Power Menu
- 200 watt power supply
- SVGA w/512k video memory
- 3-1/2" & 5-1/4" floppy drives

#CCWSCA0017

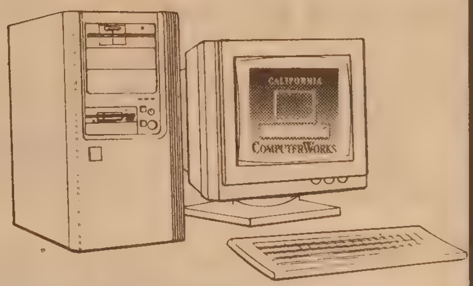


$1179.
Color Monitor w/105 MB HD

386DX-40 MHz Mini-tower Complete System

- 1-year depot warranty
- Windows 3.1
- DOS 5.0 • 4 MB RAM
- SVGA w/512k video memory
- 64k RAM cache
- 200 watt power supply
- 101 keyboard
- 3-1/2" & 5-1/4" floppy drives
- Power Menu
- McAfee Antivirus

#CCWSCA0012



$1899.
w/170MB HD

486DX-50 Mid Tower

- 1-year depot warranty
- Windows 3.1
- DOS 5.0 • 4 MB RAM
- SVGA w/512k video memory
- 64k RAM cache
- 200 watt power supply
- 101 keyboard
- 3-1/2" & 5-1/4" floppy drives
- Power Menu
- McAfee Antivirus

#CCWSCA0002

Monitor Extra

SPECIALS THIS MONTH

TOSHIBA

Satellite
T1850

Toshiba Satellite™ 1850

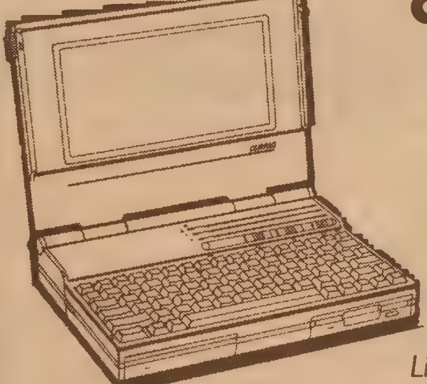
- 6.8 lbs light
- Brilliant i386SX-25 MHz processor
- 64-gray VGA display
- 80 MB hard drive–plenty of Space
- Universal 3-1/2" floppy drive
- 4 MB RAM (expandable to 12) gives Windows a rocket boost

COMPAQ

NEW!

Compaq Contoura 386SL-25 MHz Notebook

- 1-year onsite warranty
- 60 MB hard drive
- High-contrast VGA display
- 3-1/2 hour rechargeable battery pk.
- Smart hibernation and auto-off
- DOS 5.0 pre-installed
- 2 MB RAM expandable to 10
- QuickLock key protects your data



Limited Supply **$1699**

TOSHIBA

Satellite
T1800

Toshiba Satellite™ T1800

- So light, it practically defies gravity (6.8 lbs)
- Stellar i386SX-20 MHz processor
- 64-gray VGA display for out-of-this-world graphics
- Galactic-sized 60 MB hard drive
- Universal 3-1/2" floppy drive
- 2 MB RAM (expandable to 10)

Avanti 486

486SLC-25 MHz Notebook

- 80 MB hard drive
- Send/receive fax modem
- 4 MB RAM; 1K on-chip cache
- Windows 3.1 & mouse
- DOS 5.0
- WinFax
- Carrying case

#000048601

$2949

Qualify for Whole Earth Access Financing and pay no interest on any computer purchase over $500. Minimum monthly payments required, and if not paid in full in 6 months, finance charges will accrue from date of purchase. Offer does not apply to consumer electronics products.

WHOLE EARTH

0% FINANCING FOR 6 MONTHS
Zero% Financing 6 Months

THE ONLY PLACE ON Earth TO BUY COMPUTERS

Berkeley
Hours:
Sat-Wed: 10am-6 pm • Thurs. & Fri: 10am-8pm

San Rafael
Hours:
Sat-Wed: 10am 6pm • Thurs & Fri: 10am-8pm

San Francisco
Hours:
Sat-Wed: 10am-6pm • Thurs & Fri 10am-8pm

Concord
Hours:
Mon-Fri: 10am-6pm • Sat & Sun 10am-6pm

San Mateo
Hours
Mon-Fri: 10am-9pm • Sat: 10am-6pm • Sun 11am-6pm

San Jose
Hours:
Mon-Fri: 10am-9pm • Sat & Sun: 10am-6pm

Sacramento
Hours
Mon-Fri: 10am-9pm • Sat & Sun: 10am-6pm

5

THE ONLY PLACE ON Earth TO BUY COMPUTERS

Berkeley
2990 7th &
Ashby
(510) 845-3000

San Rafael
863 E. Francisco
Blvd.
(415) 459-3533

San Francisco
401 Bayshore
Blvd.
(415) 285-5244

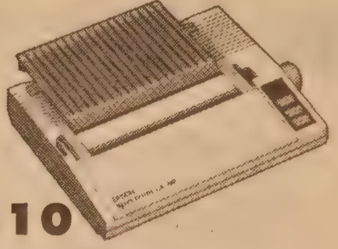
Concord
Willows
Shopping Center
(510) 686-2270

San Mateo
Island Shopping
Center
(415) 578-9200

San Jose
3530 Stevens
Creek Blvd.
(between
Winchester &
San Tomas)
(408) 554-1500

Sacramento
3130 Arden Way
(916) 489-1000

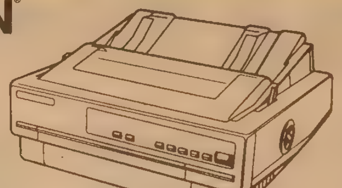
EPSON



LX-810

9 Pin • SmartPark™ paper handling • 200 CPS Super draft • 30 CPS NLQ • High resolution graphics

169.



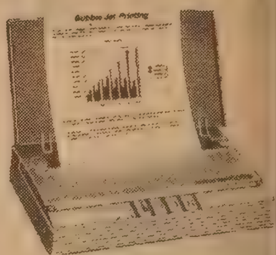
LQ-570

This 24 pin printer utilizes scalable fonts, enhanced graphics, and advanced paper handling to offer better performance.

269.

Canon BJ10ex

The Canon BJ10ex gives you high-quality document, anywhere, anytime. This portable printer has 360 dpi resolution and battery operation. Optional battery and sheet feed.



$319

IBM Business Partner
Authorized Advanced Products Dealer

Monitor Included

intel inside

IBM® PS/1® Expert Model 2155-S14

- 1-year warranty
- 386SX-25 MHz processor
- 2 MB RAM (expandable to 16)
- 3-1/2" disk and 5-1/4" drives
- 14" SVGA color monitor
- 170 MB hard drive
- DOS 5.0 • Windows 3.1
- Microsoft Works for Windows
- 512K video memory
- Virus protection
- 3 months free Prodigy®
- Easy built-in help system & tutorial
- PS/1 Club for 20-hour help via modem
- 5 easy-access expansion slots.

Limited Supply

$1499

® IBM is a registered trademark of International Business Machines Corp. and is used under license. ™ Lexmark is a trademark of Lexmark International, Inc.

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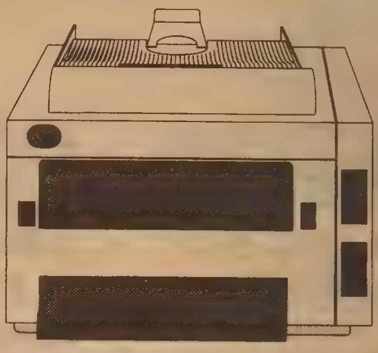
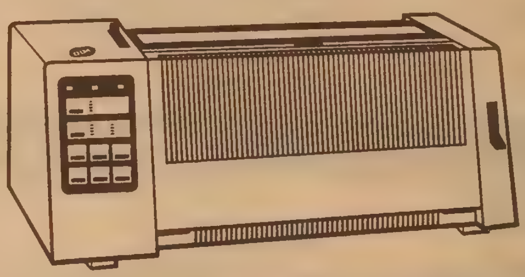
Authorized Advanced Products Dealer



IBM® Laser Printer E

IBM's most affordable laser printer is built to fit on any desktop, prints 5 pages per minute at a sharp 300 dpi, and is built to meet demanding IBM standards.

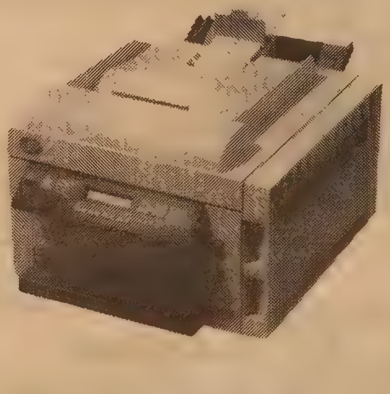
829.



IBM® PPSII 2380

IBM takes impact printing seriously as you and your business. This solid, reliable 9-pin printer is built with a straight paper path so six-part forms and thick paper print right the first time.

$319



IBM® Laser Printers 6 and 10

IBM's Laser 6 and Laser 10 come standard with a 200-sheet input tray, and IBM's Print Quality Enhancement; they grow with your business with optional envelope and extra paper drawers and an option for PostScript.®

6A: 1299 **10A: 1499**

® IBM is a registered trademark of International Business Machines Corp. and is used under license. ™ Lexmark is a trademark of Lexmark International, Inc.

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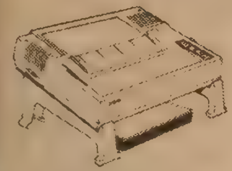
WHOLE EARTH

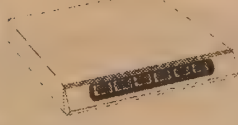
Avalanches of Accessories

Manufacturing Company, Inc.
CURTIS



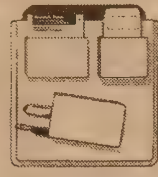
Universal Printer Legs
$5.95

System Connection



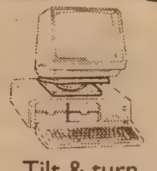
Power Control Center SP1000
$15.95

BASIC NEEDS



Utility Pack
$7.95

MicroComputer Accessories, Inc.
A RUBBERMAID COMPANY



Tilt & turn monitor stand
$13.95

THE SOFTWARE TOOLWORKS

THE MIRACLE PIANO TEACHING SYSTEM

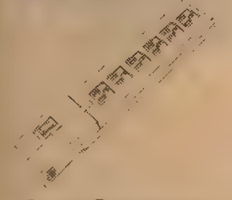
Software Toolworks

The Miracle Piano Teaching System

The first keyboard that teaches you how to play! • Pro keyboard with 49 large velocity-sensitive keys, 128 instruments and sounds • Full orchestral accompaniment • Flashcards, demo, video games, practice sessions, all designed to help you learn how to play piano.

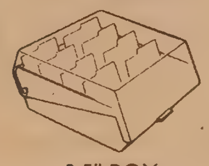
MAC .... $429.
DOS .... $399.

System Connection



Surge Protector
$4.95

INLAND



3.5" BOX
HOLDS 80 DISKS!
$4.95

System Connection

similar to illustration

Mouse w/software
AC-ME01
$9.95

ALLSOP
Dual Disk Drive Cleaner CK.-50

$5.95

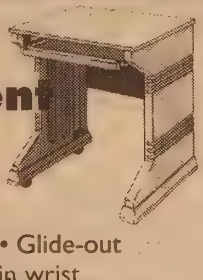
"Puzzle Pieces" Mouse/Wrist Pad Set

Protect your wrists whether you're using your mouse or keyboard. "Puzzle" design lets you take the pieces apart for your convenience.

$8.95

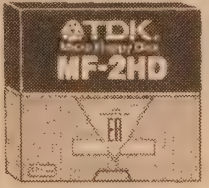
MicroComputer Accessories, Inc.
A RUBBERMAID COMPANY

Space-Efficient Workstation



A mobile, compact and self-contained computer desk for the home or office • Glide-out keyboard drawer with built-in wrist rest/storage compartment #1050

$109.



TDK.

TDK 3.5" HD Disks

Choose the top name in magnetic media for your valuable data. (Sold in 10-packs only)

SOFTWARE

Prince of Persia from Broderbund

Animated game of the year, with Arabian Nights theme and endlessly challenging levels.

25.

After Dark

Wacky animations or gorgeous changing patterns to fight screen burn-in and enhance your office. A must-have!

25.

Kaboom

Scores of humorous digitized sounds to replace your Mac's regular beeps and event sounds.

25.

Carmen San Diego (all editions except CD & Deluxe)

All-time bestsellers with great sounds and graphics. Kids learn geography, history, and more as they track down the world's most insidious crook and her gang.

Excluding CD ROM and deluxe versions

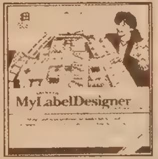
35

SAM Anti-virus

Protect your computer from unwanted software guests. From Symantec, the leader in virus insurance.

69.

My Advanced Label Designer



With My Advanced Label Designer, you can pump out every kind of Avery label, audio and video cassette labels, even signs and flyers. Super-easy to learn.

Macintosh 35. Windows 35.

Microsoft Word

The best-selling word processor for the Macintosh and Windows is easier with drag-and-drop editing and built-in grammar checking.

Macintosh 289. Windows 299.

Microsoft Excel

Bill Gates ordered the Microsoft team to create the best spreadsheet ever. Now Whole Earth offers it at the best price ever.

Macintosh 299. Windows 329.

Lotus 1-2-3

It's easy to use, widely compatible, and full of flashy new features. Whole Earth makes it easy for you to bring your office into the 90s.

DOS 319. Windows 329.

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Hours:
Sat-Wed: 10am-6pm • Thurs & Fri: 10am-8pm

San Francisco
Hours:
Sat-Wed: 10am-6pm • Thurs & Fri 10am-8pm

Concord
Hours:
Mon-Fri: 10am-6pm • Sat & Sun: 10am-6pm

San Mateo
Hours
Mon-Fri: 10am-9pm • Sat: 10am-6pm • Sun 11am-6pm

San Jose
Hours:
Mon-Fri: 10am-9pm • Sat & Sun: 10am-6pm

Sacramento
Hours
Mon-Fri: 10am-9pm • Sat & Sun: 10am-6pm

ELECTRONICS

Qualify for Whole Earth Access Financing and pay no interest on any computer purchase over $500. Minimum monthly payments required, and if not paid in full in 6 months, finance charges will accrue from date of purchase. Offer does not apply to consumer electronics products.

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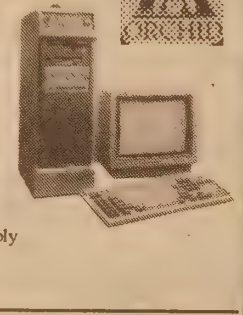
Zero% Financing 6 Months
FOR 6 MONTHS

AiM FOR THE BEST !

90 Days Same as Cash On Systems Purchase ! *

FREE Software Installation With System Purchase
We Do Custom Systems Configuration & Upgrade

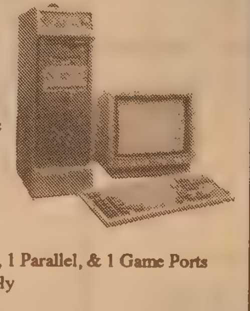
ORCHID 486-33/50/66 MHz 32-Bit VESA Local Bus



* Intel 486-33DX/50DX2/50DX/66DX2 MHz
* 256KB WriteBack Cache Memory
* 4MB DRAM 70ns (up to 32MB)
* 210MB 14ms IDE Hard Drive
* ORCHID Fahrenheit VA/VLB w/1MB
  32-bit VESA Local Bus w/Voice Annotation
  1280x1024 Max. Resolution
  16.8 Million Max. Color Display
* TEAC 1.2MB Floppy Drive
* TEAC 1.44MB Floppy Drive
* KeyTronic 101+ Enhanced Keyboard
* Logitech 3-Button Mouse w/ Pad
* ORCHID VLB IDE Controller
  32-bit 2HD/2FD VESA Local Bus
  Max. 8 MB/s data transfer rate
* 2 Serials, 1 Parallel, & 1 Game Ports
* Tower Case w/ 230 Watts Power Supply
  Daul Cooling Fan
* Microsoft DOS 5.0 Package

$ 1819 / 1879 / 2049 / 2099
(Monitor not included)

486-25SX/33DX/50/66 MHz 64KB Cache 120MB HD ISA



*Intel 486-25SX/33DX/50DX2/50DX/66DX2 MHz
*64KB Cache Memory
(up to 256 KB)
*4MB DRAM 70ns (up to 32MB)
*120MB 15ms IDE Hard Drive
*SAMSUNG SyncMaster 3 1024x768
0.28dp SVGA monitor
*REALTEK SVGA 1024x768 Graphic
Card w/1MB & 65,535 Hi-Color
*TEAC 1.2MB Floppy Drive
*TEAC 1.44MB Floppy Drive
*101 Enhanced Keyboard
*Microsoft Compatible Mouse w/ Pad
*2HD/2FD IDE Controller w/ 2 Serials, 1 Parallel, & 1 Game Ports
*Tower Case w/230 Watts Power Supply
*Microsoft DOS 5.0 Package

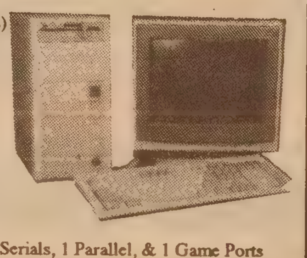
$ 1299/1569/1629/1799/1849

intel® 486-33/50/66 MHz EISA True 32-Bit Work Station

*Intel 486-33DX/50DX2/50DX/66DX2
*256KB Cache Memory
*8MB DRAM 70ns (up to 64MB)
*Orchid Fahrenheit 1280 or Diamond
Stealth w/1MB & Hi-Color
*TEAC 1.2MB Floppy Drive
*TEAC 1.44MB Floppy Drive
*KeyTronic 101+ Enhanced Keyboard
*Logitech 3-Buttom Mouse w/ Pad
*Maxtor 213MB 15ms SCSI Hard Drive
*Data Technology 32-Bit EISA SCSI Cache
Controller w/512KB (upgradable to 4MB)
*Eight 32-Bit EISA Expansion Slot
*Full Tower Case w/250 Watts Power Supply
& Daul Cooling Fan
*Microsoft DOS 5.0 Package
*Support MS-DOS, SCO UNIX, Interactive UNIX, Netware 386

$ 2449 / 2499 / 2679 / 2729
(Monitor not included)

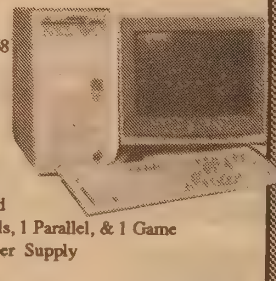
386-25SX/25DX MHz SVGA 40MB HD



*386-25SX/25DX MHz
*2MB DRAM 70ns (up to 8MB)
*40MB 16ms IDE Hard Drive
*Super VGA 1024x768 0.28dp
Color Monitor
*Trident 9000 1024x768
SVGA Graphic Card w/512KB
*5.25" 1.2MB Floppy Drive or
3.5" 1.44MB Floppy Drive
*101 Enhanced Keyboard
*Microsoft Compatible Mouse
*2HD/2FD IDE Controller w/ 2 Serials, 1 Parallel, & 1 Game Ports
*Mini Tower Case w/ 230 Watts Power Supply

Complete Sys. $ 849/899
(32KB Cache Memory add $40)

386DX-33/40 MHz ISA 64KB Cache 105MB HD



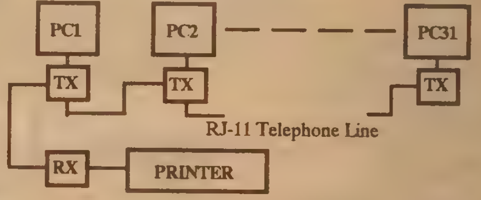
*386DX-33/386DX-40
*64KB Cache Memory
(up to 256KB)
*4MB DRAM 70ns (up to 32MB)
*105MB 15ms IDE Hard Drive
*SAMSUNG SyncMaster 3 1024x768
0.28dp SVGA Monitor
*Trident 8900C 1024x768 w/1MB
SVGA Graphic Card
*1.2MB Floppy Drive
*1.44MB Floppy Drive
*101 Enhanced Keyboard
*Microsoft Compatible Mouse w/ Pad
*2HD/2FD IDE Controller w/ 2 Serials, 1 Parallel, & 1 Game
*Mini Tower Case w/ 230 Watts Power Supply
*Microsoft DOS 5.0 Package

Complete Sys. $ 1179/1199

Error Free Printer Sharing

Low-Cost network up to 31 computers

One device solve all your toughest printer sharing problems



Features:

*Auto buffer to hard disk
*Only 1 second for print job
*250K bits/sec. data transfer speed
*Up to 4000 feet transmission distance
*4096 files print queue
*255 copies for each printing file
*Normalize 4 wires RJ-11 telephone cable
*No data miss
*Flexible Auto. Switch
*Up to 31 computers link
*Only 1 AC adaptor required for receiver
*Time out selectable 10, 15, 30, 60 sec.

Bufferlink Transmitter (TX) $45
Bufferlink Receiver (RX) $49

Monitors

14" SVGA Color Monitor 1024x768 .28	$275
14" SVGA Color Monitor 1024x768 .28 NI	$315
Samsung 15" SyncM. 15 .28 1024 NI 70Hz	$499
Samsung 17" SyncM. 4+ .28 1280 NI 70Hz	$849
Samsung 17" SyncM. 5c .26 1280 NI 72Hz	$949
ViewSonic 4E 1024x768 .28	$309
ViewSonic 5E 1024x768 .28 NI 72Hz	$415
ViewSonic 5+ 1024x768 .25 NI 70Hz	$525
ViewSonic 6E 1024x768 .28 NI 60Hz	$349
ViewSonic 6FS 1024x768 .28 70Hz Flat	$615
ViewSonic 7 17" 1280x1024 .28 NI 72Hz	$1029
ViewSonic 8 20" 1280x1024 .31 NI 72Hz	$1580
SONY 1304S 1024x768 .25 NI 60Hz	$575
SONY 1604S 17" 1024x768 .25 NI 70Hz	$1029
NEC 15" 3FGx 1024x768 .28 NI 60Hz	$649
NEC 15" 4FG 1024x768 .28 NI 70Hz	$749

* w/system

Graphic Cards

Oak 800x600 w/512KB	$42
REALTEK 1024x768 w/1MB & Hi Color	$65
Trident 8900C 1024x768 w/1MB	$65
Trident 9000 1024x768 w/512KB	$45
Paradise 1024x768 w/1MB	$99
Paradise Graphic Accelerator w/1MB&Hi-C	$189
Tseng Lab 1024x768 w/1MB	$99
Orchid Pro-Designer IIs w/1MB & Hi-Color	$139*
Orchid Fahrenheit w/1MB & Hi-Color	$209*
Diamond SpeedStar w/1MB 24-bit Hi-Color (24-Bits 16 Million Color)	$148
Diamond Stealth w/1MB Hi-Color	$229
ATI Ultra Graphic w/1MB	$329
ATI Ultra Graphic Pro w/2MB VRAM	$539
Genoa 7900 Multimedia w/ 1MB Hi-Color (24-Bits 16 Million Color)	$150

Softwares

Microsoft DOS 5.0 Upgrade	$49
Digital Research DR-DOS 6.0	$66
Microsoft Windows 3.1	$87
Microsoft Windows 3.1 upgrade	$49
Microsoft Excel 4.0 for Windows	$125
Microsoft Entertainment Pack 1-3	$25@
Microsoft Flight Simulator 4.0	$38
Microsoft Word 2.0 for Windows	$125
IBM OS/2 Version 2.0	$139
WordPerfect for Windows 5.1	$115
PFS: Windows Work	$65
BitFax for Windows w/OCR & BitCom	$105
BitFax for Windows V2.0	$45
MultiMedia Upgrade Kit (CD-ROM,CDs,Sound Blaster Pro,Midi........)	$565

Miscellaneous

Logitech Serial/Bus MouseMan w/MouseWare	$65
Logitech Serial TrackMan 2 w/MouseWare	$75
Logitech Scanman 256 w/OCR 400DPI	$299
Kensington Expert Mouse Track Ball	$105
Microsoft serial mouse	$69
KeyTronic 101+ enhanced keyboard	$45
Maxiswitch 101 enhanced keyboard	$39
Northgate Omni 101/102 enhanced keyboard	$76
Northgate Omni Ultra 118 key enhanced keyboard	$95
Zoltrix 2400/9600 Send & Receive Fax Modem w/MNP5	$59
Zoltrix 2400 Baud Internal Modem	$40
TEAC 1.2MB/SONY 1.44MB Floppy Drive	$58/54
Sound Blaster Mono/Stereo Sound Card	$99/189
Motherboards (286, 386SX, 386, 486, EISA, Local Bus)	Call
Hard Drives (IDE, SCSI, ESDI), DRAMs (SIMM,SIPP)	Call
HP LaserJet Laser Printer & Memory Upgrade	Call

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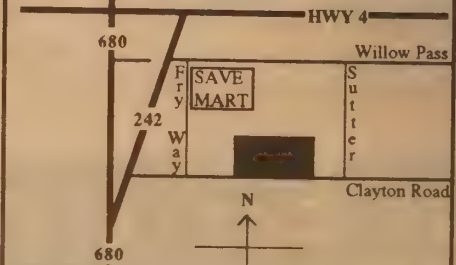

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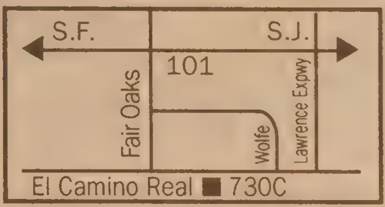

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X105Z 4 MB Module	250
SUN 3/100's series	
4-24 MB Exp Brd	950
SUN 3/200's; 4/200's; 3/400's series	
8-32 MB Exp Brd	1750
Mdl 3/50	
4-8 MB Exp Brd	769
Mdls 4/330	
8-64 MB Exp Brd	2699

AST RESEARCH MEMORY

Premium II 386/SX20; 386/33T; 486	
500780-003 1 MB Module	$75
500780-004 4 MB Module	225
Premium 386/33; -25; SX/16; 486/33; 25T; 25; 25E	
Cupid Exp Brd 500722-004	
500718-002 1 MB Module	60
Premium 386/25; SX/16	
500718-001 1 MB Module	75
Premium 386C; 386/16; Advance FASTRAM; FASTboard 386	
500510-007 1 MB Kit	95
500510-008 4 MB Kit	225
Premium 386	
500510-003 1 MB Kit (static)	75
500510-004 4 MB Kit (static)	185
Cupid Exp Brd for Premium 386/25; 386/33; 486's	
500722-004 1-16 MB Exp Brd	425
Premium Exec Notebook 386SX20	
1 MB Module	99
4 MB Module	210

ZENITH DATA SYSTEMS MEMORY

Mdl Z-386SX	
Z-605-1 2 MB Kit	$125
Mdls Z-386/33E; 33; 25; 20	
ZA-3800-ME 1 MB Module	90
ZA-3800-MK 4 MB Module	205
SuperSport SX	
ZA-180-64 2 MB Card	199
ZA-180-86 2 MB Card (ALPHA)	199
ZA-180-87 2 MB Card (BETA)	199
SuperSport 286; 286E	
ZA-180-66 1 MB Card	185
SuperSport 286E	
ZA-180-64 2 MB Card	199
Turbosport 386E	
ZA-3034-ME 1 MB Card	199
4 MB Memory Card	495

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	20 MHz	169
	25 MHz	179
	33 MHz	199
68030	16 MHz	129
	25 MHz	199
68010	16 MHz	60

QUME LASER MEMORY

QS 410	
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4 MB	225

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DeskPro 386/20e; 20; 35e, 25; 286e	
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113132-001 4MB Module	199
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113644-001 1-9MB Exp Brd	150
113645-001 4-12MB Exp Brd	275
DeskPro 386s-16	
113646-001 1MB Module	99
112534-001 4MB Module	199
113633-001 1-9MB Exp Brd	160
113634-001 4-12MB Exp Brd	260
DeskPro 286N; 386N; 386SX/20	
118688-001 2MB Module	85
118690-001 4MB Module	180
DeskPro 386N; 386SX/20	
118689-001 2MB Module	120
DeskPro 286N; 386N	
118700-001 0-4MB Exp Brd	175
DeskPro 386/33L; 486/25; 486/33L; SystemPro	
115144-001 2MB Module	150
116561-001 8MB Module	350
116568-001 32MB Module	2100
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108071-001 1MB Kit	99
108069-001 1MB Exp Brd	230
108069-002 2MB Exp Brd	325
108070-001 4MB Exp Brd	460
108070-002 8MB Exp Brd	745
Portable 386	
107651-001 1MB Kit	199
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107654-001 4MB Exp Brd	325
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117081-001 1MB Module	99
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117081-003 4MB Module	450
Portable SLT/286	
110235-001 1MB Module	175
110237-001 4MB Module	375
Portable SLT/386	
118303-001 1MB Module	125
118304-001 2MB Module	199
118305-001 4MB Module	325
Portable III	
107331-001 512K Kit	55
107332-001 2MB Kit	145

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T1600 2 MB CARD	99
T3100SX 2 MB CARD	99
4 MB CARD	195
T3100e 2 MB CARD	99
T3200SX 2 MB CARD	99
4 MB CARD	195
T3200 3 MB CARD	199
T1000SE; XE 1 MB CARD	110
2 MB CARD	99
T5100 2 MB CARD	99
T5200; T8500 2 MB CARD	110

HP PERSONAL SYSTEM MEMORY

VECTRA 486 PC (must install in pairs)	
D2150A 1 MB Module	$75
D2152A 8 MB Module	450
VECTRA 386/25 PC	
D2381A 2 MB Module	150
D2152A 8 MB Module	475
VECTRA QS/20PC, RS/25PC; RS/20PC; QS/16S	
D1640A 1 MB Kit	65
D1642A 4 MB Kit	185
Apollo DN2500 1 MB Module	89
Apollo DN3010A; 3500; 3550; 4000; 4500	
2-8 MB Exp Brd	609

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1 MB	$225
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486DX-50/64K	**$1630**
486DX-33/64K	**$1450**
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386SX-33	**$990**

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486DX-50/64K	734	486DX-33/64K	555
386-40/64K	174	386SX-33	99

SIMM MEMORY

256K X 9-70NS	$12	256K X 9-60NS	$14
1M X 9-70NS	34	1M X 9-60NS	38
4M X 9-70NS	140	4M X 9-60NS	155

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IDE 2HD/2FD/2S/1P/1G	$18	AT-IO 2S/1P/1G	$13
Adaptec 1542B SCSI	250	Adaptec 1542BK SCSI	275

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Mini-Tower/200W	$53	Mid-Tower/230W	$76
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Teac 1.2M FD	56	Mitsumi 1.44M FD	48
Teac 1.44M FD	50		

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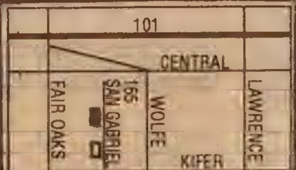

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- 1.2MB and 1.44MB FDD
- IDE 2FD/2HD Controller
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- MAXTOR 130MB 15MS Hard Drive
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- 1024-768.28DP 14" Color Monitor
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- Mini Tower or Desktop Case
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- MAXTOR 130MB 15MS Hard Drive
- 101 Key Enhanced Key Board
- 1024-768.28DP 14" Color Monitor
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- Mini Tower or Desktop Case
- 200W Power Supply

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VIEWSONIC 5E	388
VIEWSONIC 6E	328
VIEWSONIC 7	1018
VIEWSONIC 8	1518
NANAO 9070U (16", .28dp)	780
NANAO 9080I (16", .28dp)	918
NANAO F550I	1025
NEC 3FGX (15", 1024•768, 0.28)	622
NEC 4FG (15", 1024•768, 0.28)	732
Sony CPD 1304(14", 1024•768, 0.25)	542
Sony CPD 1604 (17", 1024•768, 0.25)	950
MAG 15H (15", .28dp)	588
12" Monochrome	73
14" Monochrome	92
14" Monochrome VGA	115
14" VGA (.51dp)	194
14" SVGA (.39dp)	222
14" SVGA (.28dp)	262

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PRINTER CARD	12
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9600/2400 INTERNAL FAX/MODE	55
9600 INTERNAL MODEM	218
OEM 3-BUTTON MOUSE	14
LOGITECH MOUSEMAN (serial)	63
LOGITECH MOUSEMAN (bus)	69
LOGITECH SERIALMOUSE	35
COLORADO DJ-10 TAPEDRIVE	177
COLORADO DJ-20 TAPEDRIVE	231

SOFTWARE

MICROSOFT WINDOWS 3.0	$ 45
MICROSOFT DOS 5.0	45
MICROSOFT WORD for WINDOWS 2.0	317
BITFAX for WINDOWS 3.0	50

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85mb/18ms (IDE)	213
100mb/16ms (IDE)	237
120mb /16ms (IDE)	267
130mb/15ms (IDE)	280
213mb/14ms (IDE)	360
240mb/15ms (IDE)	525
200mb/16ms (ISCSI)	585
340mb/15ms (SCSI or IDE)	670
676mb/16ms (SCSI or IDE)	1165
TEAC 1.2MB floppy	55
TEAC 1.44 MB floppy	50

KEYBOARDS

MAXISWITCH 101-KEY	$ 34
DEYTRONIC 101-KEY	39
LITE-ON 101-KEY	24
CHICNY 101-KEY	26
NORTHGATE OMNIKEY 102	83
MORTHGATE OMNIKEY /ULTRA	113

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1MB - 9 SIMM 70ns	27
1 MB - 9 SIMM 60ns	28
4 MB - 9 SIMM 80ns	100
4 BM - 9 SIMM 70ns	105
4 MB - 9 SIMM 60ns	115

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WEITEK 4167-333	$ 595
WEITEK 4167-25	575
80387DX-33/25	60/55
80387SX-20/16	30/25

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IDE 2FD/2HD	$ 13
IDE 4FD/2HD	34
IDE 2FD/2HD with 2s/1p/1g	20
MFM 2FD/2HD	30
ADAPTEC 1542B Kit	240
BUSTEK SCSI EISA	295
ULTRASTOR 12C with 1MB	317
ULTRASTOR 24F/	445
ULTRASTOR 22F/22C EISA ESDI	440/590

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Mitsumi CD-ROM w/Card	199
NEC CD-ROM 84M	509
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MEDIAVISION ProAudio Spectrum 16	219
Microsoft DOS 5.0/Windows 31.	45
Microsoft Mouse	60
SoundBlaster Pro w/MIDI Kit	180

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ORCHID IIS with high color	120
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OAK with 256K	35
MGP	11

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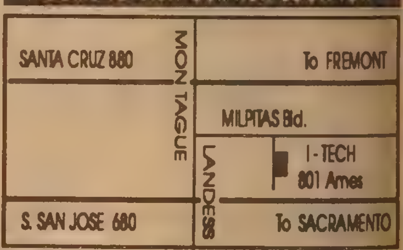

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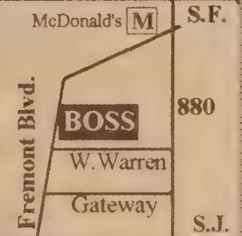

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- 80 MB IDE Hard Drive 18ms with 32K Cache
- TEAC 1.2 MB or 1.44 MB Floppy
- Super VGA Monitor & SVGA 16-Bit Video Card
- 1:1 Interleaved 2HD/2FD Controller
- 2 Serial, 1 Parallel & 1 Game Ports
- 101 Enhanced Keyboard
- 230W Power Supply and Vertical Case

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80 MB IDE	CALL
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Orchid Prodesigner II w/1M Impression plus non interlaced	CALL
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VGA card w/512K	CALL
VGA card w/1 MB	CALL

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IDE Controller	CALL
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☐ 1:1 Interleaved 2HD/2FD Controller
☐ 2 Serial, 1 Parallel & 1 Game Ports
☐ 101 Enhanced Keyboard
☐ 230W Power Supply and Vertical Case

$950 486SX-20MHz Intel 486SX-20 MHz System

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☐ 1 MB Ram 70ns Expandable to 32 MB
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☐ TEAC 1.2 MB or 1.44 MB Floppy
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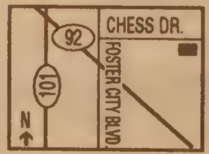

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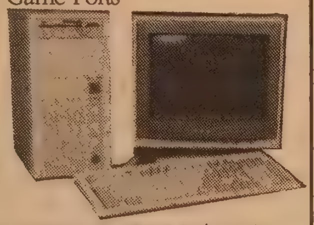

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- SVGA Monitor .28dp
- 2 Serial, 1 Parallel, 1 Game Ports
- 101 Keyboard
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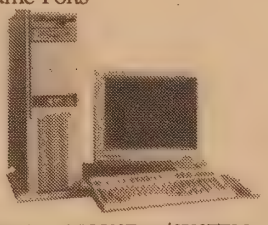

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- 101 Keyboard
- DOS 5.0

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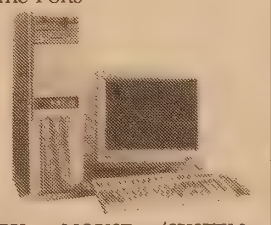

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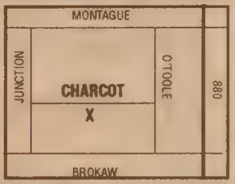

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- Socket for 80387
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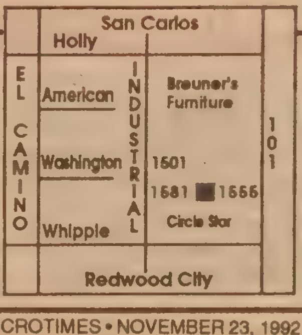

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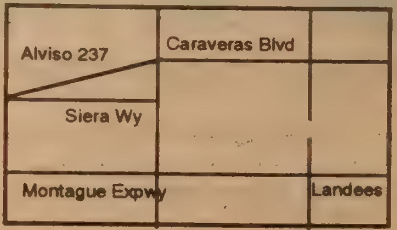

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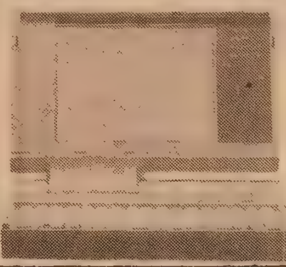

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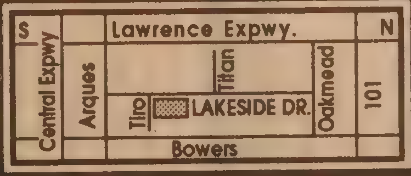

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WIN3.1...........$865/875

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WIN 3.1.......$1120/1155

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...5.25" Archive SCSI full kit	$755
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SCO UNIX m user 3.2.2	$
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Mini Tower, 4MB, IDE Cont., 1.44 Floppy Drive, 120MB Hard Drive, VGA Card, VGA .28 Color Monitor 13", 101KB
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386DX-25	$139
386DX-33 /40w/64K	$164/169
486DLC33c64	$230
486DLC33c64 w/ math co	$295
486SX-20/25 UgrdbletoDX.	$189/209
486DX-33w/64/256K	$550/590
486DX2-50 w/256K	$633
486DX50 w/256K	$745

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ASA 486-33/DX-50 256k	$620/795
ASA 486-33/50 256 EISA.	$815/975
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MYLEX

386DX-33 w/ I/O, IDE 64K	$375
486DX-33 w/ IDE, I/O 128K	$785
486DX-33 EISA 128K	$1295
TYAN48650DX/2 EISA,256K	$1290/1175
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Genoa 486-33 w/64K .upto 64M.	$650

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Medium Tower/Full AT w/ P.	$79/69
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External HDD Cases

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IDE 4FD/2HD	$33
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SCSI

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ESDI

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Diamond Stealth	$220
Mylex GLI	$269
ATI Ultra Grpx 1MB	$295

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P17CS01 17",FST,1280,.26	$1205
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Sony	
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CPD1604S 17"..OrigOEM	$1025955
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MF5217 17",60/70Hz	$899
MF5221A 21",LMF,1280,72Hz	$2020
MF5421A 21",LMF,1600,.26	$2329
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MV550 15",FST,.28,70Hz	$599
MV850/875+17",FST,.31/.26	$929/1165
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NEC	
3FGX 15",.25	$649
4FG 15",.25,Microp	$755
5FG 17",.26,Microp	$1375
6FG 21",.26,Microp	$2835
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L25 ACAD,T34020,1280,256C	$1430
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GOLD 16+2, Ti34010	$425
GOLD 24, Ti34010, 24 Bit	$365
GOLD 24+2, Ti34010, 24 Bit	$495
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Cobra Sp,1024,72Hz,Rend Rdy	$1077
Design Master, 32k Color	$315
MYLEX	
GXE020B Ti34020	$1045
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3C503 16 bit Thin/Thick	$165
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16 bit 10BaseT	$129
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AE-2 Lantastic Kit	$459
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Ver 2.2 50/100 User	$1957/3077
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Ver 3.11 20/50 User	$1957/2797
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7 Pak.. [Mam,Ill Ency 2.0, World & Us, .Ref Lib,Game II, Nat Geog]	$115

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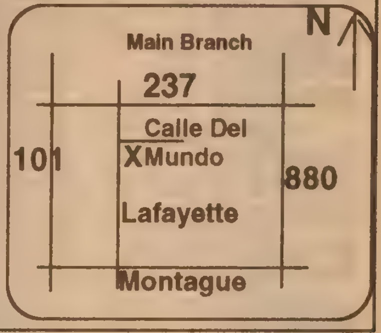

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Early Reports From Collide-A

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An Interview With Kaleida CEO Nat Goldhaber

By John Perry Barlow

The weird union of IBM

in the summer of '91, with progeny already on the way. The odd couple would jointly create two new companies, Taligent and Kaleida.

Taligent would be responsible for the development of next-generation processors and operating systems. Kaleida would have the far tougher and more ambiguous job of creating software, tools, standards, and interface metaphors for all the digitized imagery and sound which has generally been called multimedia but which is now, according to the latest in AppleSpeak, vaguely called "New Media."

Kaleida and its sibling entered a world which didn't seem particularly glad to see them. (One pundit sneered, "I've never seen anyone make an eagle from two turkeys.") On top of that, it drifted through its first year of existence without either a CEO or any other single leader to define its vision.

Given such a list of initial negatives, it was obvious that not just anyone would be right to turn Kaleida into an actual enterprise. But CEO Nat Goldhaber is not just anyone. He is, in fact, a fellow whose path to the top of Kaleida has been as touched with irony and contradiction as, well, a joint venture between Apple and IBM.

Nat is the son of two Berkeley physicists, who, despite being a regis-

"We had the following conversation sitting on his boys' swing-set, high in the Berkeley Hills. From that vantage it looked like Kaleida really could change the world."

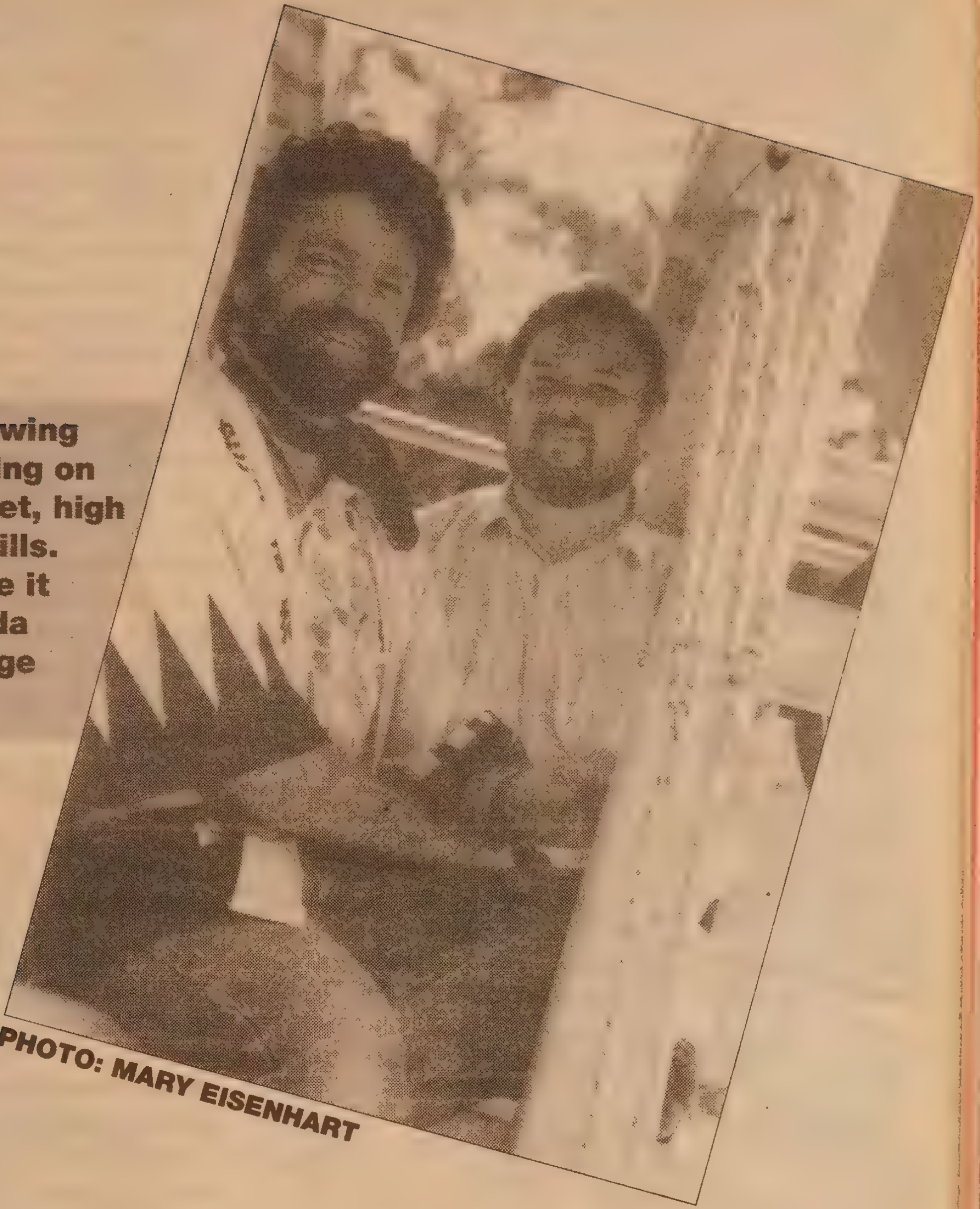

PHOTO: MARY EISENHART

and Apple was consummated like a shotgun marriage

tered Republican, has a set of social views and aspirations which are very much at home in the People's Republic. He was the founder, at the age of 23, of Maharishi University (which is still alive and accredited in Fairfield, Iowa after twenty-two years).

He was the "Energy Czar" of the State of Pennsylvania during the Three Mile Island disaster and the energy crisis. While still in Scranton, he developed The Web, the first successful peer-to-peer, distributed networking system for microcomputers.

Goldhaber returned to Berkeley in 1984 and founded Centram Systems West where, in 1985, he got his first experience with getting Apple to talk to IBM. Recognizing that the recently introduced Macintosh would need some transparent method of connection with The Rest of Them, he created a low-cost LAN for heterogeneous machines called TOPS, short for Transcendental Operating System. (When I first became aware of TOPS, I didn't know Nat or his background and assumed that "transcendental," in this application, was some obscure computer term...)

By the time he escaped its presidency in 1988, he had sold Centram to Sun Microsystems and over six hundred thousand copies of TOPS. For the next four years, he was a high-tech venture capitalist, most recently serving as president of Cole Gilburne Goldhaber and Ariyoshi Management, Inc.; he also served on the boards of several companies, including OnTechnology and Shiva.

Nat is also a good friend, a deep guy, and fixed enough in some permanent-condition childhood to make him an excellent companion for almost any adventure. But when I met him in 1990, he also seemed like a fellow with a mild case of Post-Entrepreneurial Stress Syndrome, an affliction common among the young and absurdly successful. Despite what some might consider the full-time job of raising toddling triplet boys, he seemed to be casting about for a new venue in which to exercise his considerable sense of mission.

The combination of Kaleida's Herculean obstacles with its slim but Promethean possibilities added up to something about the right size and weight against which to match his highly heterogeneous skill set.

We had the following conversation sitting on his boys' swing-set, high in the Berkeley Hills. It was a beautiful day, the Bay sparkled below us, and everything seemed possible—including a Kaleida which really would change the world.

So why did you take this job?

I get to edit this, so I can make snide comments? [*laughs*]

Or leave them in, as the case may be. I prefer

interviews with the snide comments left in.

[*Snide comments omitted.*]

For a number of years now, I have observed this seeming collision of technology, information, entertainment, and communications. Many others have observed it as well. It struck me that there were real opportunities in that collision to bring about new industries that were not only economically powerful but also socially powerful. And that intrigued me.

I was disappointed by the results of the computer revolution in that most of the effects of the computer revolution—specifically the microcomputer revolution—were restricted to business. Although a number of enthusiasts bought computers and used them in a non-business context, far and away the mainstay of the computer industry is business. It's directed towards business, it's business-oriented, its whole being is business-ish. And, as such, it has failed to affect a vast majority of people in the United States, and certainly on Earth.

"I took the job because I felt it was an opportunity to guide this process. To design software, hardware, and systems that would be open, inclusive, unintimidating, entertaining, and informative. That is my motivation. That, and I think it's an opportunity to do very well."

This new intersection of these technologies and business...collision as we called it earlier...

I've wondered if you shouldn't spell Kaleida with a "C," thinking of the collision between IBM and Apple, but perhaps there's a better reason...

It struck me that there was an important role to be played here. It looks possible to bring about the inevitable digital world, somewhat sooner and perhaps somewhat better than would occur in the natural course of events, and it looks possible to direct it and guide it in a way that I thought was more broadly beneficial.

What do we want in the "inevitable digital world?" What's in there that might humanize or improve life for the bulk of us?

Well, you have to buy a bunch of premises in order to believe that this is going to be true, and you may or may not, but we'll see.

I seem to be trying to bring it about myself, so I must think there's going to be something good about it. Either that or I'm just perverse.

[*laughs*] Or we're both equally misguided.

First of all, let's cover computers as they are today.

The promise of the microcomputer revolution was, roughly speaking, that somehow these magical computational devices would empower people. People with a capital "P." Broad ranges of people, not just a few people in business. And the notion was that because these computational devices would be both extremely powerful and extremely cheap, they would also be extremely ubiquitous.

I suppose in some sense the original Commodore 64 and PET sales, and whatever the equivalent Atari machine was, did sort of suggest that there would be a very broad acceptance of these machines and that they might have a role to play.

But in fact, they were so hard to use that they immediately got stuck on a shelf. The friends of people who bought one, who saw their friends stick it on the shelf, didn't buy one. And that was the end of the promise.

So the microcomputer, from a business standpoint appropriately, from a social concept too bad, became relegated to the business world...

A microcomputer is a dedicated WordPerfect server in probably 75% of the cases.

Exactly, a dedicated WordPerfect or a dedicated Lotus server.

Which doesn't exactly encourage a person to have one at home.

It doesn't encourage people to have one at home, and although it may make things slightly easier for some people in a business context, and maybe it allows some business people to be slightly more effective at their jobs, for the most part it's had zero effect on anything, except creating this big new industry. That's a big disappointment.

I must point out that nobody was exactly sure how having a powerful computational device *was* going to empower people. I certainly wasn't sure of that—I had some speculation, I suppose. But very few people were able to articulate concretely the expected benefits.

Anyway, we can all agree that it didn't happen.

And I think we all agree that something was supposed to happen.

There was something that was supposed to happen, but we still haven't gotten very concrete about saying what it was. I'll probably make it more concrete in a minute.

The other thing I noticed happening—leaving aside for the moment the fact that we don't know what the benefit was supposed to be—was that the computers were becoming actually harder to use, instead of easier.

There was a big blip in ease of use with the introduction of the Macintosh. And I suppose, if one were feeling very kind, one could argue that there was something of a blip when Windows started to become more ubiquitous.

Personally, I find Windows more difficult to use than DOS, because you have to know DOS and Windows to use it. Windows is not particularly straightforward or intuitive in any way. If you were feeling very, very kind on your off days, you could say that the hordes from Redmond actually did promote a graphical user interface in the eleventh hour, and that was a small trend toward slightly easier to use.

But on the whole, if you see the massive direction that computers have taken, it's clearly more difficult to use a computer today than it was eight years ago when the Mac first came out.

It's certainly more difficult to use a Mac now than it was then.

Absolutely. The Macintosh community would hasten to add, "Yes, but look how much more powerful it is." My answer to that is, "You're right, but also you've made it far more difficult for the nonenlightened to participate..."—if computer use can be equated with enlightenment.

So the uninitiated become increasingly disenfranchised from whatever these alleged benefits are, and the enfranchised become increasingly more specialized, because it takes more and more of their cycles to figure out how to use it. And you find that the microcomputer, instead of being a tool that was going to level the playing field and allow everyone equal access to these unknown benefits—well, it's clearly not doing that. It's clearly becoming a tool that, if anything, exacerbates the differences between...what's the right word?

The "knows" and the "know-nots"? The technologically adept..?

The initiated and the uninitiated, let's just leave it at that. Anyway, it's too bad. I think.

I agree it's too bad. Though perhaps it wouldn't be so bad if the unenlightened really properly appreciated the benefits of being unenlightened.

[*laughs*] That's possible, you never know! It could be that somehow they're far better off because they don't waste all those cycles trying to figure out how to use these silly boxes. Get to spend time outdoors instead of chunking away at some foolish box.

But anyhow, for the sake of these arguments we'll say this is not the case and that somehow they're deprived.

So here it is, the eve of the collision of these industries, and we now have a new opportunity to restart.

What I would like to suggest is that it's important that we restart it well this time, knowing a priori that, left unguided, the trend is away from broad humanization of computing, and towards a high, deep business orientation. Wrongly, I think.

Therefore, I took the job because I felt it was an opportunity to guide this process. To design software, hardware, and systems that would be open, inclusive, unintimidating, entertaining, and informative. That is my motivation. That, and I think it's an opportunity to do very well.

To do good and do well, as the missionaries used to say.

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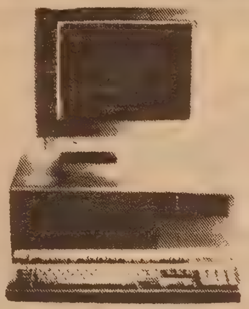

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large corporate masters, both of which are, in their present state of development, well beyond simple human morality. A corporation the size of either Apple or IBM is a creature you can no more expect to have a conscience than you'd expect a horse to have a conscience.

I've met some pretty nice horses! And I'm sure you have too, but I understand the principle. The point is well taken.

The answer is, interestingly, that I think there are individuals within those companies who have plenty of conscience, and who understand that this was an opportunity to do the sorts of things that I've described.

And I think that this has, at least in part, motivated them. I don't think this was explicitly something which they believed would be an enormous money-maker for them, but rather something they believed it was Important with a capital "I" to do. That some higher principle would be upheld by creating this entity. I actually believe that.

I agree with you, at least in terms of the individuals involved. I just wonder if the value they place on that kind of importance will maintain itself through some of the patchier periods to come or whether the bottom line will suddenly become a lot more important with a little "i."

Well, unknown. There are funding agreements that carry this Kaleida entity into existence and profitability, or at least what I hope will be profitability. There is, already committed, more than adequate funding to do that. It's always possible to un-commit, I suppose, but not without an abrogation of obligations made in writing. And therefore I think that there's enough time for me to turn this thing into something that can be both good and profitable before the money runs out. We'll see.

This sense of mission you refer to may be missing a critical element though. It seems to me that most enterprises start out with a person who has a sense of mission, who gathers around himself others who share it, and, finally, resources to pull it off.

In this case, you've got two large institutions pooling resources to create another big institution, to which they add, a year later, the fellow with the sense of mission, namely yourself. Don't you think that's going to be a difficult sequence to overcome?

Well, two comments. First of all, the answer generally is yes, I do think that it would be a difficult sequence to overcome.

But, point two, I became involved a year ago, on a consulting basis, and actually influenced a lot of the initial design of the company. I know my influence was important in structuring a careful business plan for the company. We need to develop it, but there is at least a starting business plan, and I had my hand in it. That was what was agreed to by the boards of directors at both Apple and IBM. So I think there is general agreement about what the structure of this company ought to be and how it ought to go forward.

Also, I'll tell you in all frankness, one of the most important issues during my negotiations before I accepted this position was the degree to which I would have autonomy to pursue profitable as well as appropriate directions for the company. That is, I wanted assurance that they believed it had a life of its own, directed by its own people, as opposed to being superimposed by the big companies.

But if Kaleida truly has a life of its own, then it's possible for its progenitors to see it as a competitor. I'm concerned that you folks are going to be developing technology which many companies, particularly IBM and Apple, will want to develop themselves. So the natural course of events may lead them into direct competition with you. How do you deal with that? If you are a truly separate entity, how do you say, "All right, I've got this little bailiwick carved out. Don't you go do it too."

The answer to that question is "Carefully."

That's how we proceed. I think that your analysis is correct. I think that IBM and Apple are capable of creating internal development groups whose agendas are identical or extremely similar to ours, and that they may in fact compete with us over the long haul. My job as CEO is a) to do those pieces so much better than they would be done internally that there would be no question about which one is appropriate to accept. And b) to work politically and actively to explain to both parent organizations that their original conception of an independent organization promulgating standards, that is neither IBM nor Apple, but somehow the synergy of them both, is the appropriate way to proceed. And I will do that as well as I know how.

It is a minefield. But fortunately I have a crude map where the mines are.

You and I have just been to Japan together, where they know a lot about competing and cooperating at the same time. And it seems in this country we don't know very much about how to do that—we either compete or cooperate. I'm just concerned that an effort to be both here will result in their hamstringing you while competing with you. Saying "You can't do that, you are ours. We're going to do that because we want to."

It's politics, it's technology development, it's the deployment of resources in an appropriate manner. It's thinking smart and fast and effectively. And if I'm lucky I'll pull it off.

My objective is to make them a lot of money, to give them a very wonderful, extensible, flexible, and universally applicable multimedia scripting language standard that they should be proud to include as part of their operating systems. They are certainly signed up to that conceptually. It's my obligation to deliver, and while I'm doing it, to keep them enthusiastic about what I'm doing.

That brings up a different set of questions... I continue to think that the real purpose of multimedia is not publishing or presentation but communication, which means that you've got to have tools that ordinary people can use to write video postcards to Mom with. The first efforts that I've seen at those types of tools, such as HyperTalk, were not very successful in my opinion.

Too hard.

I found it much too hard. Do you think that it's going to be possible for Kaleida to come up with something which is both powerful enough and easy enough?

There's a broader question: Is that Kaleida's mission, to build that kind of tool? Not directly. Our initial goal is to build the enabling technology and let somebody else who's well equipped to do it build the tools.

That buck sure gets passed around.

You would want to argue, I think, at this point, that nobody's equipped to do that or they would have done it by now. I'm not sure. MacroMedia did come out with a product called Action!, which was a sort of video-postcard multimedia. It was strictly business presentation-oriented, but I must say it was easy to use. Without reading the instructions, I was at least able to do a slide show where I had things flying in and sparkling on the screen. Not very inspiring, perhaps, but definitely moving—with a small "m"—within ten minutes after opening the package up. So I thought it was pretty successful. I don't think it's been an enormously successful product in the marketplace though.

My suspicion is that Kaleida will develop some tools and a rich set of interface standards, which will be suggested but not imposed on developers. We expect our interface standards to inspire the development of some extremely easy-to-use tools.

Evocative APIs.

Right, but it's not our intent to be in the tool business. We would like to see a lot of people in the tool business and we don't want to compete with them.

Do you think that's wrong?

Well, personally, I think a lot of what's wrong with the technology at the moment is that everybody has been eager to build the most powerful thing that could be built, and has passed on to somebody else the job of making that powerful thing accessible. Good interface design is difficult and even profound. You have to know an awful lot about the complex matter of human awareness. How humans look at things is not an engineering problem, it's a spiritual problem.

I agree. It leads to an ontological and an epistemological problem: How do we know, and what do we think is?

Right, exactly. So you see this constant thrust toward the technologically more powerful and the more complex, which isn't matched necessarily by more usable tools for ordinary folks.

I know that we would like to develop one or two really great multimedia titles. Those probably would use either the language that we're developing itself, Script X—which will be a HyperTalk-like language—or would be built using something like MacroMedia Director. Or a combination of both. I certainly think that we have to show the world that

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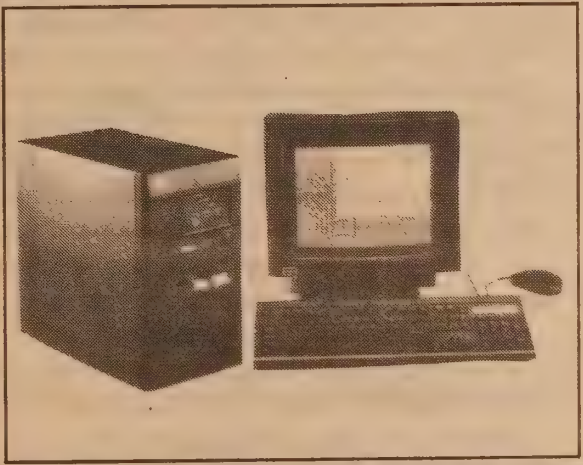

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There are very few broad titles that seem worthwhile in existence today. There are some. But I think that we need to demonstrate more attractive, more broadly acceptable titles. And we need to do it as exemplar of a future.

> "One of the most valuable things that will emerge from this digital age is the decentralization of the information infrastructure of publishing. Each individual will actually be able to be a movie studio, a textbook publisher, a scientific journal publisher, a newspaper publisher, a fiction publisher, a fact publisher."

It seems like one of the reasons there aren't very many titles has to do with the multitude of formats in which one might publish. I understand Apple and IBM have suddenly decided that they're going to jump on CD-ROM as being the method of publication. But it seems to me that one is already at the end of its limits.

[*laughs*] Well, it may or may not be.

As a format for publishing anything with real video on it?

In fact, it may not be. There's lots of talk about double-speed, double-density CD-ROMs. Let's say for example, if you get four times the data rate off of a CD-ROM, or eight times or sixteen times, it's clear that you can have good video on those things as well.

MPEG 2 is well under way, there are a number of implementations of MPEG 2 that are in the labs now that look really good. With MPEG 2 and Quadra speed, Quadra data rates, I think you can get acceptable video. In that sense, CD-ROM may in fact not be at the end of its life, but at the beginning of its second generation.

I agree that current CD-ROM technology is probably inappropriate for really knock-down, bang-up multimedia titles, at least ones that have large components of real-time video and production values equivalent to a television program. That will change, I believe, relatively soon. I think everybody is working on it who builds CD-ROM devices.

You mentioned MPEG 2. Do you think Kaleida's going to be in a position to get everybody in line on a compression standard? John Sculley told me in an interview a while back that they did Kaleida because they wanted to have something with sufficient horsepower to say "This is how it's going to be," to clarify the Babel of standards and formats that have been out there.

It's unclear to me whether it's appropriate for us to adopt a single data-compression standard or whether, as QuickTime, we simply need a slot to insert whatever is today's best compression technology. My suspicion is that we're better off remaining at least relatively agnostic with respect to specific compression technologies.

The problem with picking one is that maybe we have some inklings of which one would be successful, but we could also be picking one that's not as good as one that comes out just six months later. These technologies are moving with blazing speed, and there are people who are sitting in their dark rooms hacking away right now, coming up with stuff that's vastly better. It's an area where I think the American genius will be able to shine. It's the kind of thing that we do uniquely well. I think we probably will find much better compression/decompression technologies in the near future.

It would be a shame to pick one and end up picking the wrong one, or in fact pick one and make it a standard when other stuff is significantly better. I think our job here is to leave a slot where it's easy to plug in a data compression/decompression standard, later on.

So your governing philosophy for the whole project is opening the architecture every opportunity you get.

Absolutely. We just got through meeting with many companies in Japan. One of the pitches I made that they liked best was the degree to which we want to open this up. We will open up the APIs to everything. We will publish the language. We believe that that's the only thing that proves that we're going to stay honest and make our royalty rates reasonable. We'll follow the Adobe model more than anything else, of publishing the language as well as selling software based on it. So we have an extremely broad view of what open architecture means, and we have planned to remain as faithful as possible to that view.

It seems like you may have some cultural problems with at least one of your progenitors, though. I mean, Apple is still extremely proprietary about the contents of its ROMs, even though it has demonstrably done itself a great deal of harm over the years by remaining closed in its architecture. Will they be willing to open up, or allow you to be that open?

I believe that Apple now recognizes the importance of openness, and is culturally changing.

They may be slow, but they're trainable.

[*laughs*] Uh, that's not exactly the way I would put it, but something like that.

And more power to them. I think it's an extremely tough transition, and I don't want to predict the manifestations of that change. But I think there's a recognition that openness is terribly important. I think the creation of Kaleida was in fact an early demonstration of that openness. Willingness, for example, to cooperate with the enemy—not, of course, from any Federal Trade Commission perspective—on the development of the Power PC. A pretty extraordinary thing—they agreed on a processor type and they agreed on an underlying operating system.

This brings up the problem with these kinds of alliances. If you look at previous alliances like this, they haven't been terribly successful, partly because other technologies get developed that one company or the other prefers. I'm now looking at the development of the Newton, and their decision to use the ARM chip in the Newton instead of a RISC chip developed jointly. I wonder to what extent that's going to subvert the Power PC?

Oh, you know, I doubt that it will. My suspicion is that Newton is regarded by IBM—and I'm absolutely making this up, I have no basis in fact for stating this, except opinion—is regarded by IBM as not germane to the issues of the Power PC, which is fundamentally designed, at least in its initial form, to be a business machine. That's not to say that IBM thinks it's a bad thing; only that it's not relevant to the Power PC issue.

But your point is well taken. I think that Newton is a big departure from everything that's central at Apple. It's a different operating system, it's a different processor type, it's a different market, it's a different margin—as a genuine consumer electronics device, the margins are going to be considerably different from other Apple products. It is a different metaphor, it is a specialized rather than a generalized device, it is their real first serious foray into the world of consumer electronics.

I think that there's a lot of experimentation going on, appropriately, and that out of that experimentation will come either an enormously successful first instance of this product, or a second instance which will be more successful and perhaps less experimental because they'll have some experience. I wish Newton all the best of luck. I'm not suggesting anything otherwise. And it may be right on the mark from the beginning. We'll see.

One of the big problems that multimedia seems to be having relates to laws, not technology. Better tools are not going to solve the whole intellectual property dilemma. I keep seeing the same video clips over and over again, and there's a reason for that. The provenance of these things is very hard to

Continued on page 250

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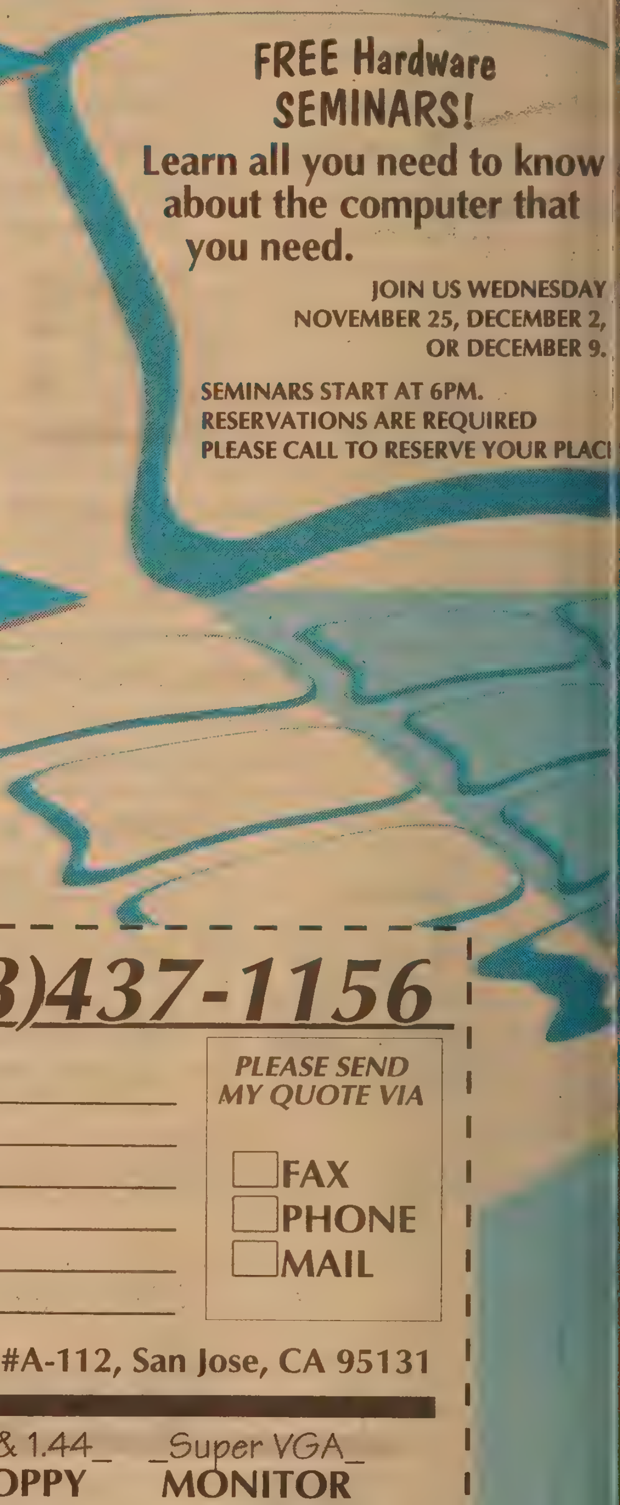

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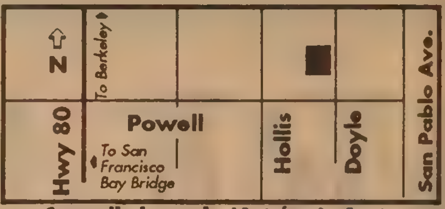

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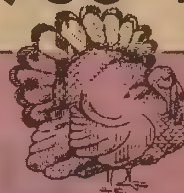

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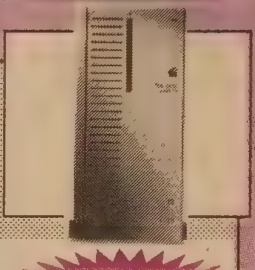

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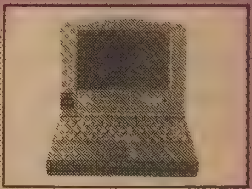

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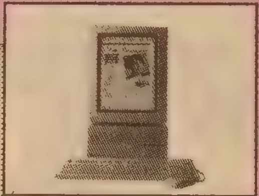

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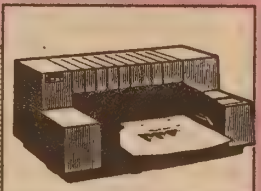

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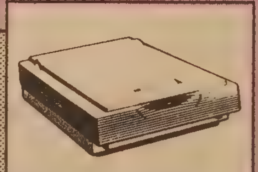

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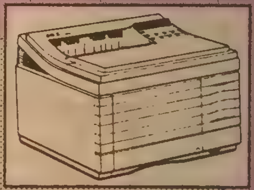

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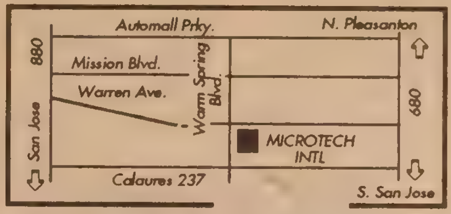

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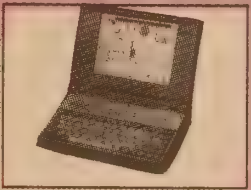

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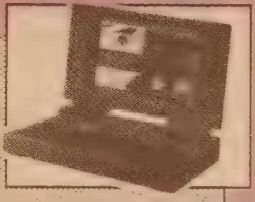

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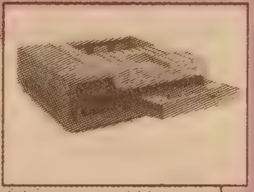

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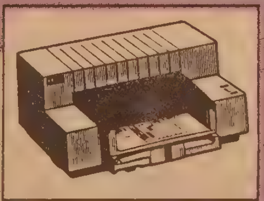

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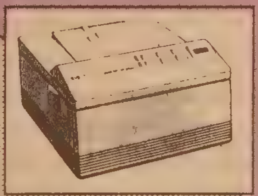

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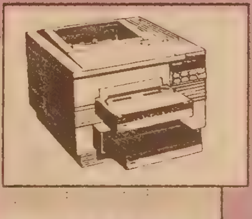

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With so much emphasis on the Amiga as a graphics platform, development of basic computer software, such as word processors, has been slow compared to its Mac and PC equivalents. Furthermore, with the exception of a rather dated version of WordPerfect, none of the major packages available on the other platforms has been ported to the Amiga.

There is really no technical reason for this, since the Amiga uses the same CPU family as the Macintosh. With the Amiga exploding into the video/graphics arena, all of those videographers, graphic artists, etc. still need a good word processor.

Fortunately, there are several to choose from on the Amiga platform. Most of these programs have evolved significantly over the years and are becoming mature packages.

This month we'll take a brief look at four offerings: ProWrite 3.2.4 from New Horizons, Final Copy 1.3.2 from Softwood, KindWords 3 from the Disk Company; and Excellence! 3.0 from MSS. These products were tested on an Amiga 3000 using a high-resolution screen under AmigaDOS 2.0.

Since these are all word processors, they were generally more alike than different. Each program included the standard cut-and-paste editing functions, as well as a spell checker and thesaurus. Also, all of them used paragraph-based text formatting similar to Word for Windows. That is, formatting tabs, line spacing, etc. are set at the paragraph level, and each paragraph can have unique settings. All of them had more or less the same ruler-border that allowed you to visually set margins, indents, and tabs. KindWords and ProWrite, however, provided automatic paragraph spacing, which eliminated the need to enter two carriage returns after each paragraph.

I do a lot of word processing on an MS-DOS machine at work, and generally the only way to work on the same files on my Amiga at home is using ASCII-format files. Obviously, any special text formatting gets lost, but for documents like this article, it is not needed. Only ProWrite and Excellence! allowed me to go back and forth between platforms in a satisfactory manner. (Amazingly, the difference between Amiga and MS-DOS linefeed codes did not present a problem.) The other two programs required additional massaging of the text. Consultron's CrossDOS allowed me to transparently read and write MS-DOS disks on my Amiga.

PostScript printing and AREXX support were featured in all of the word processors except for KindWords. (The lack of PostScript support may be a non-issue once AmigaDOS 2.1 is released, with its built-in PostScript driver.) I was surprised to find Final Copy was the only one not to include a mail merge printing capability.

All four programs will operate on 1MB RAM floppy-drive-only systems, but ProWrite and Final Copy require at least two floppy drives. However, to fully utilize all features, a hard disk and additional RAM are highly recommended.

PROWRITE

Before the introduction of Final Copy, nothing matched the features and capabilities of ProWrite. ProWrite is still a solid product, with all the makings of a first-rate word processor. Many of its features aren't available in the other products. For example, of the four packages reviewed here, it was the only one that allowed me to copy text style (i.e., font, bolding, etc.) and apply it to other text. ProWrite and Final Copy were the only ones that allowed me to quickly change the case of text. ProWrite does include a bookmark feature, but you can only use one per document. Bookmarks allow you to mark a spot in a document and quickly return to it—an invaluable tool.

ProWrite provided the most ways to select text for editing using the mouse. Using different combinations of mouse clicks and dragging, you could quickly select a word, sentence, paragraph, etc. However, it was disappointing to find I could not select text using only the keyboard. Both Final Copy and Excellence! allowed text selection by holding the shift key while pressing the cursor arrow keys. This feature reduces the number of times your hand must leave the keyboard to use the mouse.

For printing, ProWrite has a high-quality setting which automatically uses larger fonts and then scales them down to a finer resolution. This helps achieve high-quality results with a dot matrix printer, and is especially effective with AmigaDOS 2.0's built-in outline fonts. For non-outline fonts, this feature works best when fonts twice the size of the fonts used in the document are available.

If you are using AmigaDOS 2.0, ProWrite leaves an AppIcon on the Workbench, upon which you can drag and drop documents to automatically load into ProWrite. Additionally, of the four packages, only ProWrite provides the option of using the standard AmigaDOS 2.0 ASL requestors (though using them prevents you from accessing certain options).

ProWrite has a few shortcomings. It was the only one whose thesaurus didn't give a definition of a word, in addition to antonyms. It was also the only one that didn't scale fonts on the fly. ProWrite will only let you use the font sizes installed in AmigaDOS. If you need to include graphics, screen updates are very slow, and there are no provisions for flowing text around graphics.

New Horizons has announced that the next upgrade, v3.3, will include better graphic handling with automatic text-wrap, a print preview mode, and password protection. Also, you will be able to name and locate graphics quickly within a document. Full clipboard support is also promised, as well as support for Soft-Logik Publishing's "HotLinks." HotLinks allows programs that support it to dynamically work with the same data.

FINAL COPY

Final Copy is the hands-down winner for printing quality on a dot matrix printer, due to its exclusive use of the proprietary Nimbus outline font technology. Unfortunately, these fonts occupy over 1MB of disk space and are not supported by any other program.

Reportedly due to copyright infringement concerns, the fonts have abbreviated names, which made selecting one more confusing than it should be. However, I was able to overcome this by renaming the font filenames using a directory utility program. It is important to note that Final Copy does not allow the use of any AmigaDOS fonts, including

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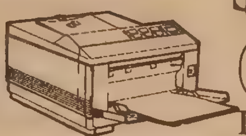

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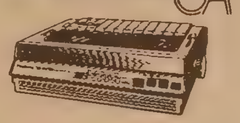

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*Complete Font Library - HP III/IIID/III	$259
*Pacific Page P.E.-IID/IIP/IIP+/III/IIIP/IIID.	$269
*Pacific Page XL w/ 2MB & accelerator board, 8 times faster, HP IIP/IIP+/III/IIID/IIIP	$649

Orchid

ProDesigner IIs $139 W/1MB & Hi-Color
Fahrenheit 1280 $199 W/1MB & Hi-Color

PC WAREHOUSE SX-25/33

*386SX-25 / 33 CPU
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PC WAREHOUSE 386-33/40

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*2S\1P\1G Ports
*101-key Keyboard

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PC WAREHOUSE 486/50

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*486-50 (not DX2) CPU
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*486DX2-66 CPU
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SONY 1604s	$1029
SONY 1936	$2199
NEC 3FGx	$649
NEC 4FG	$749
NEC 5FG	$1369
NEC 6FG	$2499
Viewsonic 6E	$359
Viewsonic 6FS	$629
Viewsonic 7	$1069
Viewsonic 8	$1589
Arche .28 SVGA	$289
Arche Non-Interlaced	$329
12" Mono Amber	$89
14" Mono Amber	$119
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Nanao 9080i	$959
Nanao F550i	$1099
Nanao T560i	$1869

Video Adapters

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OAK 800X600 VGA	$39
Trident 1024 1MB	$69
Tseng Labs 1024 1MB	$89
ATI Wonder XL 1MB	$119
ATI Graphic Vantage 1MB	$219
ATI GraphicUltra+SVGA 1MB	$329
ATI GraphicUltra Pro 1MB	$479
Orchid ProDesigner IIs w/1MB	$139
Orchid Fahrenheit 1280x1024 1MB	$199
Orchid Fahrenheit VA/VLB 1MB	$269
Diamond Speedstar 24-bit 1MB	$159
Diamond Stealth VRAM 1MB	$229

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Conner 200MB IDE	$429
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Maxtor 213MB IDE	$399
Maxtor 340MB IDE	$689
Maxtor 130MB SCSI	$329
Maxtor 213MB SCSI	$519
Maxtor 340MB SCSI	$699
Quantum 120MB IDE	$329
Quantum 240MB IDE	$499
Quantum 425MB SCSI	$889

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Item	Price
Zoltrix 2400 Int	$49
Zoltrix 24/96 Fax/Modem	$69
Zoltrix 9600 Int/Ext	$249/$289
Discovery 14.4K Ext	$489
Intel Satisfaxtion 200	$299
Intel Satisfaxtion 400/400e	$429/$469

Scanners

Item	Price
HP ScanJet IIp w/IF	$859
HP ScanJet IIc w/IF	$1439
Microtek 600Z Color	$1299
Logitech Scanman32	$149
Logitech Scanman256	$249
Parallel Scanner w/OCR	$259

Misc

Item	Price
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SummaSketch 12x12	$339
NEC SilentWriter 95	$1399
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Memory	$Call
Software	$Call

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Sure, none of these comes close to matching the features of Word for Windows, but they don't list for $495 either! At list prices near $100, all these word processors are absolute bargains!

AmigaDOS 2.0's outline fonts.

The screen display is beautiful thanks to the Nimbus fonts. Scrolling is also very fast, especially considering outline fonts, which are normally slow, were being used. Also, Final Copy is the only program that provides adjustable display magnification, a very handy tool for previewing entire pages. Unfortunately, when typing in close magnification, the screen does not scroll with the cursor, so you can type right off the screen. Also, from time to time I encountered certain un-reproducible display anomalies.

Final Copy's graphics handling is also the best of the bunch. I found it very easy to insert, move, size, and crop graphics. Text flow around the graphics was also supported, including contour flow. By making the background color transparent, you can make text follow the contour of the graphic; you can also adjust settings to create a border around the graphic. To change graphic settings, a simple double-click on the graphic brings up the graphic settings requestor.

Final Copy is also the only program of the four capable of linking graphics in a document. This provides the advantage of making the document file smaller; the graphic only appears once on your disk.

Final Copy lacks a few features too. It's the only one of the four programs that doesn't have an undo feature, an absolute must for any program. No mail merge printing is supported either.

The soon to be released Final Copy II appears to fill in most of the missing gaps. This version will include time-saving format features like style sheets and master pages. It will also include a built-in structured drawing program for making jaggie-less boxes, circles, lines, and arrows. This version adds the much needed mail merge feature and WYSIWYG PostScript printing. Final Copy II will also have a larger spellchecker dictionary and thesaurus. Version II will also have a new suggested list price of $159.95. For Final Copy owners the upgrade price is $60.

KINDWORDS 3

Although KindWords is a more than adequate word processor, its interface has an unpolished appearance. Don't let this unfortunate mask fool you though; KindWords includes most of the features you need. Although it is the only one of these word processors that doesn't include AREXX support or a column option, it is the only one that does include online help.

For graphic handling, KindWords is second only to Final Copy. It provides generally the same graphic formatting abilities, with the exception of border creation. In addition, the KindWords color palette offers a remapping option, to include frequently used colors in the graphic's palette. This allows for a better representation of the graphic on screen.

KindWords' UltraPrint feature allows very high-quality printing on a dot matrix printer. This is basically the same as ProWrite's high-quality printing option, where larger font sizes are scaled down for printing. KindWords, however, requires the larger font sizes to be exactly two or four times the size of the screen font—if you're using

Continued on page 256

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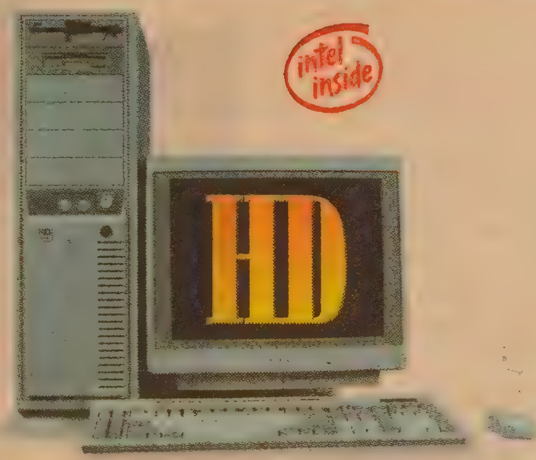

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- MS-DOS 5.0
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- Free Software Option

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14" Viewsonic 6 monitor 1024x768 .28	Add $60
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- 3-button hi-res serial mouse
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- Free Software Option

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BY BIRRELL WALSH

Reviewers, like most people, do not like to admit their ignorance, nor the difficulties they have using products. They wish to tell the story from a position of a certain divine omnipotence.

Unfortunately this is a case where the difficulty *is* the story. I set out to use Microsoft Windows' Dynamic Data Exchange to build a "Super Application" combining several products. Windows seemed to offer the tools to make that hybridization easy.

My expectations were not quite met.

THE STORY SO FAR

Several issues ago I reported using DESQview, Quarterdeck's DOS-based windowing and multitasking system, to build a "SuperApp." The goal was to build an automatic stock-selling system by integrating off-the-shelf products within a multitasking system.

I used Quattro Pro from Borland International and one of Quarterdeck's own DESQview Companions—DESQview Link—as the communications program. Although DESQview has cut-and-paste features, I chose to use files to communicate between the applications.

I wrote a DESQview Link script to get quotes from CompuServe's 15-minute-delayed on-line quote service. DESQview Link stored the quotes in a file which it created, and signed off CompuServe. Quattro Pro had been watching for the "quote.txt" file to come into existence. When it did, Quattro Pro imported the file, and then deleted the original. It parsed the quotes, ran a macro to decide which stock to sell, and created an order. The macro then exported this order as "order.txt". A DESQview Link script had been waiting for this file to appear. When it found the file, it dialed my "stock-ordering service" and sent out the order.

The SuperApp depended on the ability of each program to create files and to watch for them with some kind of "FileExists()" function. Files carried data between Quattro Pro and DESQview Link, and the existence of the file served as a semaphore for the other application to swing into action. Each application destroyed the file after it had imported it. To avoid disk-grinding, I created a small RAM disk where the files could be exchanged instantly.

The whole process took me about a week of spare time. It was grueling, but I got the job done.

MY EXPECTATIONS OF WINDOWS

With Windows 3.1, this whole process was to be massively simplified. Data could be exchanged directly with Dynamic Data Exchange. No files or file-watching would be necessary. One could exchange data using an operation about as simple as cut-and-paste. Building the Windows version of SuperApp should take maybe an evening, I thought.

To be sure that everything followed the Windows standard, I used Microsoft Excel v4, Microsoft Word for Windows, and Software Ventures' MicroPhone II. All are standard Windows applications.

Dynamic Data Exchange exists in three layers of complexity. You can cut and paste "links"; you can control links with formulas; or you can "embed" a whole application into another application.

In theory, Windows and the applications will keep track of all the connection mechanics. The application providing the information is called the "server"; the recipient is the "client". You decide if you want the data transferred from the server application to the client application as soon as there is a change in the information (a "hot link") or only when you ask. You make the decisions; Windows manages the flow of information.

In the easiest to use form of DDE, you go into the source application and choose "copy link." For instance, I went into MicroPhone II and chose "Copy Link" from the edit menu. MicroPhone II provided a list of variables I could copy from, and I chose the variable "borlquote." Then I went into Microsoft Excel and chose "Paste Link" from the Excel edit menu, and pasted into cell R2C2. As if by magic, the value of the MicroPhone II variable "borlquote" appeared in cell R2C2 of my Excel spreadsheet. Every time I changed the value of "borlquote" in MicroPhone II, the value changed in the Excel spreadsheet.

A second kind of linking does the same thing, but uses formulas to manage the connections. The formula method is useful if you are using scripts in a communications program, or macros within Excel or WinWord. It gives you more control of the process of data exchange. You can use DDE functions to open other applications, create links with them, update information from them, send keystrokes to them or change their variables, and close them. You can also use DDE calls to use functions from Dynamic Link Libraries.

A third kind of linking is OLE, Object Linking and Embedding. Implemented as a superset of DDE, it allows you to "embed" one application in another. You can have a spreadsheet entirely contained in a Microsoft Word for Windows document. While DDE requires you to open both applications in Windows to have the links work, OLE allows you to open the server application from within the client application. You can also reduce the server application to an icon within the client, a nice cosmetic touch.

DDE IN PRACTICE: NOTES FROM A SOMETIMES SWAMPY FIELD

My original plan was to duplicate the "SuperApp" that I had built in DESQview, but the notion of DDE just inflated my ambitions. This happens when you upgrade to Windows—you find your expectations are greater than they were under DOS.

While my DESQView SuperApp used only a spreadsheet and a terminal program, I decided that my Windows SuperApp would include three applications: a terminal program, a spreadsheet, and a word processor. The terminal program would get current quotes from CompuServe, the spreadsheet would compare those quotes with purchase prices and decide what stocks to sell, and the word processor would create an order form.

There is no question whatsoever that the Windows applications I used were very superior products. Excel 4 is easier to use, better to look at, and more capable than Quattro Pro for DOS. MicroPhone II has many more features than DESQview Link. And Word for Windows

Continued on page 258

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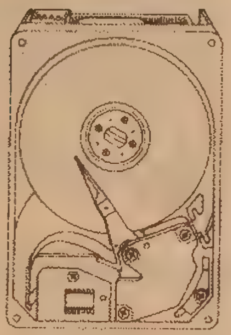

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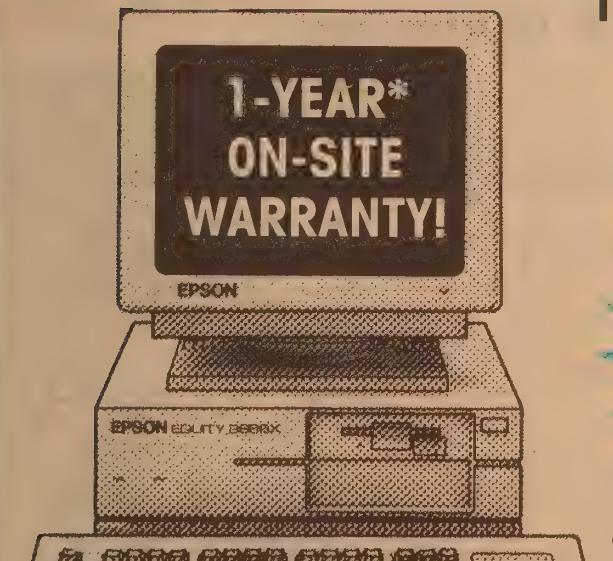
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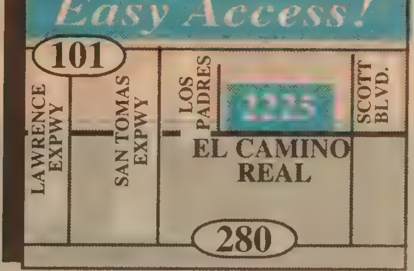
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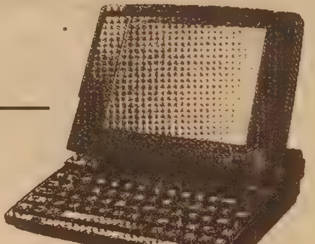

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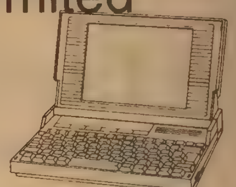

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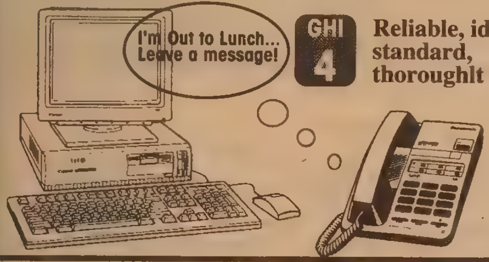
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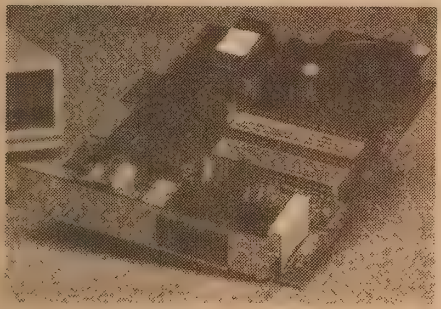

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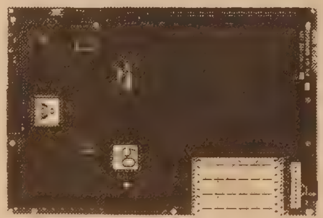

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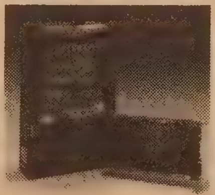

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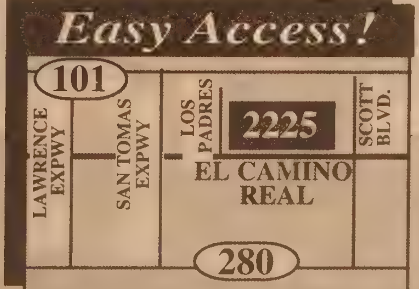

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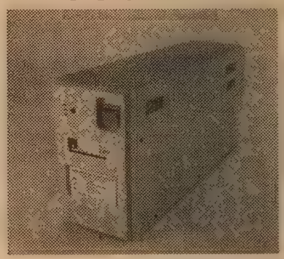

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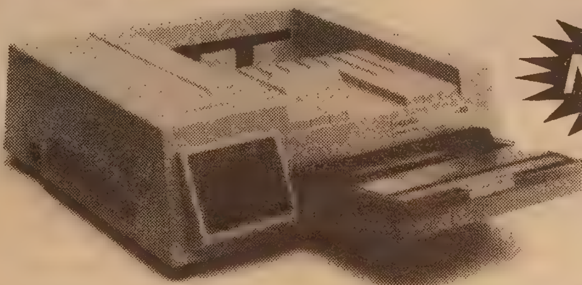

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- HP® Series II compatible
- Design fits any desktop

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*Includes $50 Mfg.'s Mail-In Rebate

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With OKI Smoothing Technology™ PCL-5 Scalable Fonts

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- High-capacity 200-sheet paper tray included
- HP® Series III compatible
- Optional RS-232 Serial interface

$1027*

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•ML-320	300cps	$319
•ML-321	Wide Carriage	459
•ML-3410	Fast 550cps! 8-part forms	1299

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•ML-590/591	NEW Auto Form Sensing	469/599
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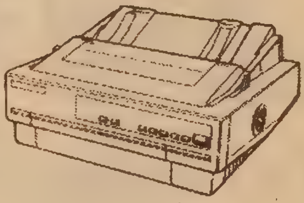

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- 24-pin, 315cps
- 12 built-in fonts
- 2 year warranty

- 24-pin, 315cps
- **WIDE Carriage**
- 2 year warranty

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LQ-510 FREE Multi-font Module	$219
LQ-870	469
LQ-1170	599
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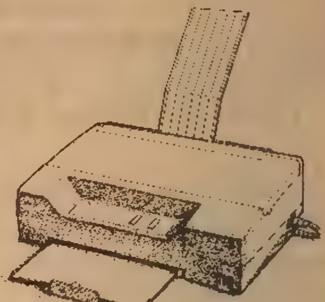
DFX-5000 *9-pin 530cps*	1299

Action Printer

AP-3250 24-Pin

$169*



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- Ultraquiet operation
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- Optional Color On Command™
- 2 Year limited warranty

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- 24-pin printer
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- Ultraquiet operation
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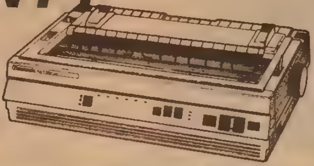

KX-P2123	KX-P1695	KX-P1124*i*
SAVE $38	SAVE $150	SAVE $70
QUIET Series Printer	*High-Speed Business Printer!*	*High-Speed Letter Quality!*
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II/III	IIP
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- 240cps, 64cps LQ
- 6 fonts, paper parking
- 2 year warranty

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Color Option
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KX-P2124
- 24-pin letter quality
- 320cps, 85cps LQ
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- 2 year warranty

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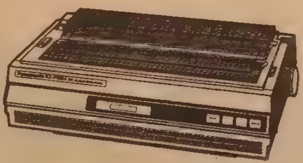

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- 9-pin matrix
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- 6NLQ fonts, (45 dBA)
- 2 year warranty

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*FREE Adobe Type Manager! W/ Purchase of 2624, 2124, 2123

KX-P2624
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- 300cps, 100cps LQ
- 11 fonts, 26K buffer
- 2 year warranty

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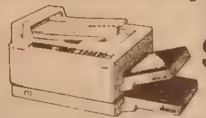
PostScript Laser



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Accessories for 4455/4450i

Legal Tray	$49
Envelope Tray	69
Toner	39
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- 2MB RAM exp to 4MB
- Two 250 sheet paper trays
- 39 PostScript fonts • 11PPM

POSTSCRIPT

KX-P4450i $1098

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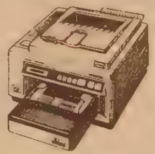
Laser Printer



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Scalable Fonts!

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- 300 dpi resolution • 5 PPM
- 200 sheet paper capacity

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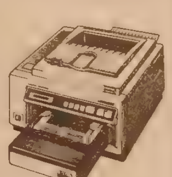

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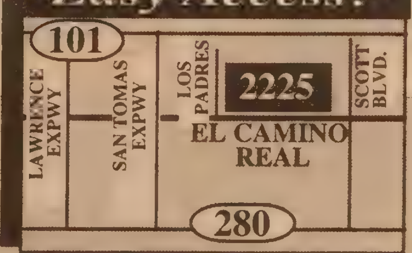

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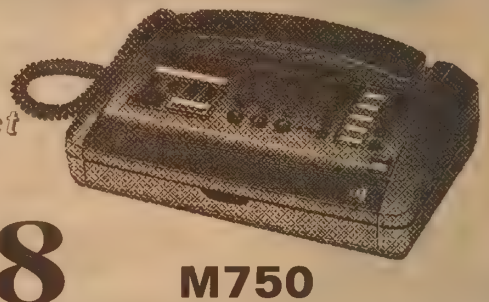

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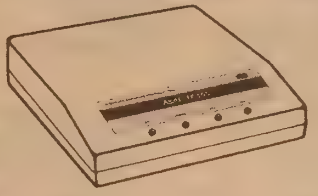

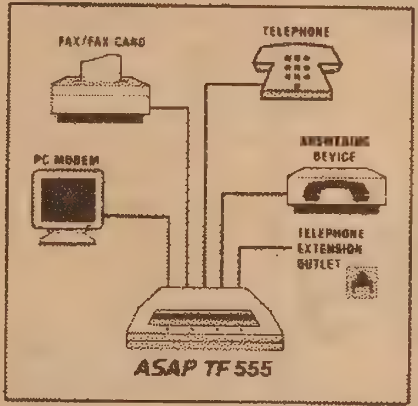

ASAP® TF300*plus*

• Access codes • TAD/phone ring count • Automatic ring reduction • Extension detection • Automatic fax detection • Automatic TAD-to-fax transfer #FSW300

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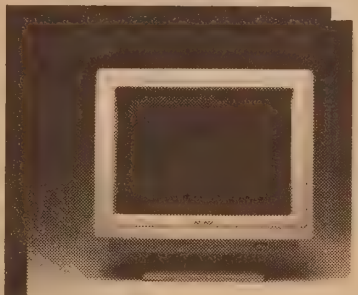

14" SVGA 1024x768 Color Display

CM9079

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CM9217

- **17" CRT** (16" viewable) with black matrix, dark glass and a non-glare silica coating
- Autoscan capability to support VGA, Super VGA, VESA 56/60/72Hz, 8514/A, XGA, MAC II and many other high resolution analog graphics formats
- Maximum display resolution of **1024x768 (non-interlaced)**
- Full auto-ranging (**90-270V AC**) power supply
- Analog inputs (**5 BNC**) & **15-pin D-sub** allow for a virtually infinite number of colors to be displayed
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- Vertical scan from **50 to 100Hz**
- Video amp dot rate of **110MHz**
- **0.31mm** dot pitch

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- **20" CRT** (19" viewable) with black matrix, dark glass and a glossy face
- Autoscan capability to support VGA, Super VGA, VESA 56/60/72Hz, 8514/A, XGA, MAC II and many other high resolution analog graphics formats
- Maximum display resolution of **1280x1024 (non-interlaced)**
- Full auto-ranging (**98-264V AC**) power supply
- Analog inputs (**5 BNC**) allow for a virtually infinite number of colors to be displayed
- Horizontal scan from **30 to 64KHz**
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- Video amp dot rate of **110MHz**
- **0.31mm** dot pitch

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PHILIPS

Professional Color Monitors

17" Digital Control SVGA

1280 x 1024

1764DC

- 17" (16V) FS CRT with invar shadow mask
- Digital microprocessor image control & memory
- Compatible with IBM, VESA, MAC II & Quadra systems
- Maximum display resolution **1280x1024** (non-interlaced)
- Video dot rate of **110MHz**
- 15-pin sub D & seperate 5 BNC inputs on back
- **30 to 66kHz** Auto horizontal scan rate
- **50Hz to 100Hz** Refresh rate
- **0.26mm** dot pitch

$1199

20" Digital Control SVGA

1280 x 1024

2082DC

- 20" (19V) Trinitron CRT
- Digital microprocessor image control & memory
- Compatible with IBM, VESA, Sun, SparcStation, MAC II & Quadra systems
- Maximum display resolution **1280x1024** (non-interlaced)
- Video dot rate of **150MHz**
- 15-pin sub D & seperate 5 BNC inputs on back
- **30 to 82kHz** Auto horizontal scan rate
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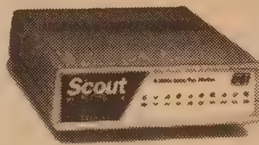
Our V.32bis Scout is Trustworthy.



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Features:	Scout	ScoutPlus
CCITT V.32bis (14,400bps)		√
CCITT V.32 (9600bps)	√	√
CCITT V.22bis (2400bps)	√	√
CCITT Group 3 send/receive fax		√
CCITT V.42bis/MNP5	√	√
CCITT V.42/MNP2, 3 & 4	√	√
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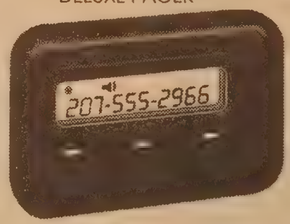

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- Auto emulation switching
- Printer sharing
- Quiet 42dbA operation

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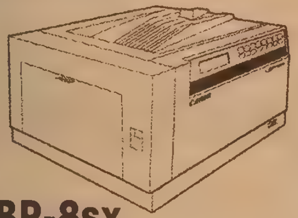

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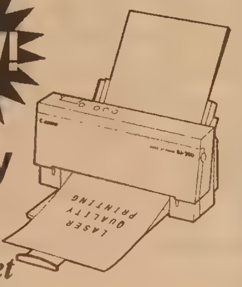

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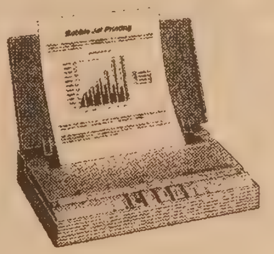

289

- Prints up to 83cps
- Text & graphics up to360dpi
- Uses plain paper & transparencies
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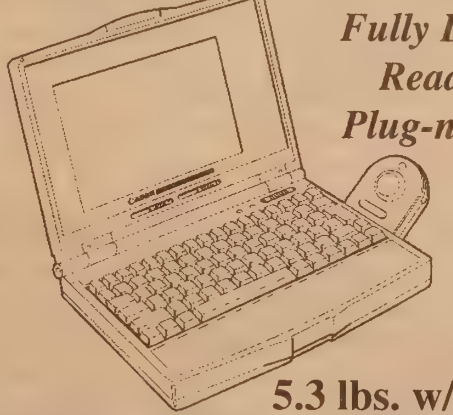
- 10", 64 gray scale backlit VGA
- **Fax Modem** (96/48 send /receive)
- 82/83 key keyboard
- Logitech trackman mouse
- Factory installed software:
- MS-Dos 5.0
- MS-Windows 3.1
- MS-Works for Windows
- Win-Fax
- **One-Year** Roadside Warranty



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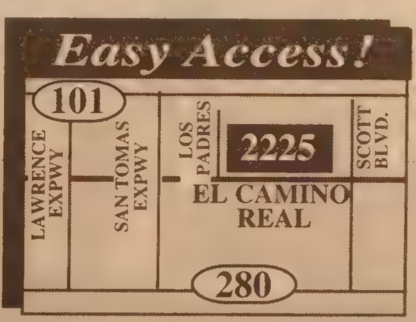

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As Windows becomes a second PC standard, a plethora of front-end enhancements and utilities add-ons have begun to materialize. In some ways this is reminiscent of the endless proliferation of front-ends and file management shells that appeared for MS-DOS in the '80s.

Though the new Windows products are a diverse lot, all of them address some common goals:

•Providing better access to Program Manager and File Manager functions—more flexible access to Windows' pull-down menus.

•Delivering an easier way of switching between applications—this may take the form of substitute task switchers, pop-up launch menus, launch icons, or virtual desktops.

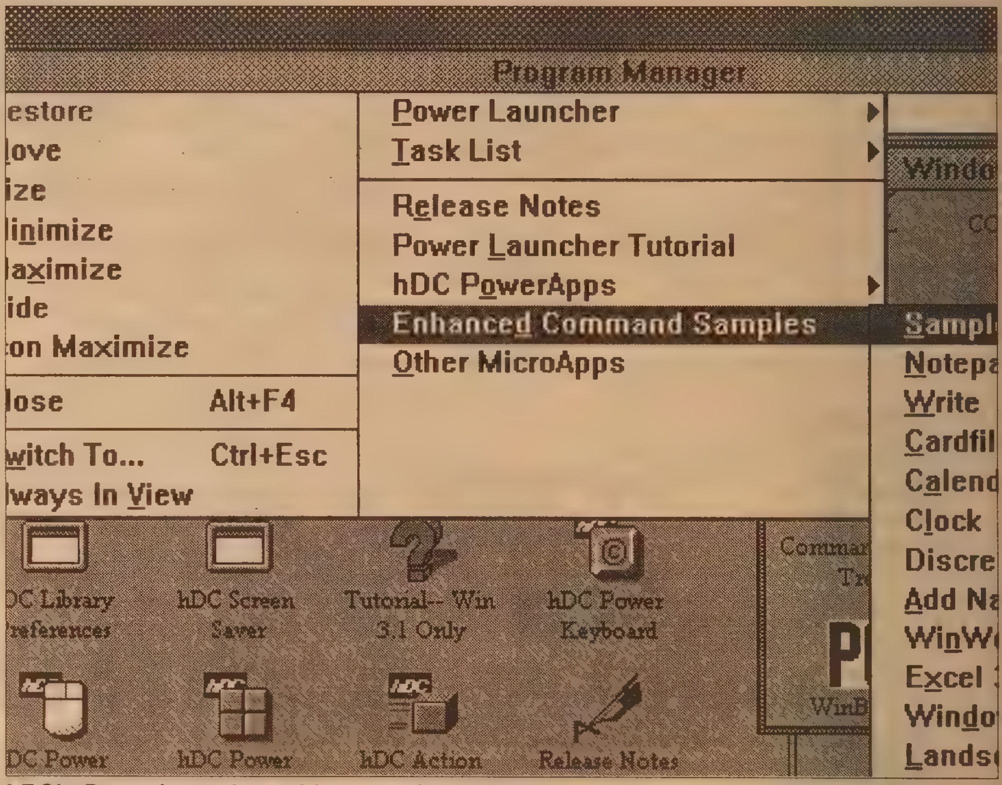
•Expanding desktop space to run multiple programs concurrently.

•Preserving the desktop configuration between Windows sessions, to allow you to resume work tasks.

Users looking for a desktop manager to provide more access to the existing features of Windows might do well to investigate one of the many competing desktop managers, such as hDC's Power Launcher or Norton's Desktop for Windows. These packages provide document management, program launching, and easy access to Windows in the tradition of DOS command shells like XTREE—they make the built-in features of Windows more accessible through the mouse, a menu system, and keyboard shortcuts.

If you "live" in the Windows environment, chances are that you multitask a number of different applications. With Windows' Program Manager, File Manager, and several productivity applications all open at once on the desktop, your screen display can get pretty cluttered. One way to deal with this is to "minimize" some of the applications on the desktop to icons, but a virtual desktop utility may be a better solution.

Imagine that your Windows desktop can consist of not just one 640 x 480 screen, but nine to sixty-four individual screens, each one with its own set of neatly arranged icons and open application windows. On one "virtual desktop" you have Program Manager and File Manager—another one displays Word for Windows, while a third and fourth contain CorelDRAW and Lotus 1-2-3. What if you could switch from one productivity area to another just by pressing a hotkey combination, or panning with the mouse? This is the "virtual desktop" concept, as implemented in some of the packages mentioned below.



hDC's PowerLauncher adds a number of pull-down menu options.

DESKTOP MANAGER OPTIONS

hDC's Powerlauncher adds a number of pull-down menu options to Windows' control menu, and also functions as a virtual desktop. The virtual desktop can autostart applications in specified desktops each time you start a Windows session. PowerLauncher's keyboard macros also allow some automation of Windows productivity tasks.

Hewlett-Packard's new Dashboard is a quick-launch control panel that replaces Windows' Program Manager with an iconic strip or button bar. A set of default applications can be set up for easy on-screen access. Dashboard can build several alternate button-bars for different users or work situations. There is a limit to the number of places reserved by the Dashboard button-bar—you can create up to nine virtual desktops, but at the expense of control icons for starting programs.

If what you really need is more screen real estate, investing $15 in Microsoft's Windows Resource Kit gets you a fine utility called TopDesk. TopDesk allows an unlimited number of virtual screens, and lets you start up programs in each session by saving "ghost images" of previously launched applications.

Rooms for Windows, from Xerox, is more or less a dedicated virtual screen utility. It allows you to construct up to fifteen rooms/desktop maps. Multiple users may run Windows from a single machine, and each may call up the desktop environment they prefer. One user might go directly to a desktop publishing room, while another goes to an accounting room with icons for Excel and Microsoft Project. Rooms is a good concept when used in this way, but for a single user, the multiple rooms approach is not as well implemented as what's offered by competitors such as hDC Power Launcher or Attitash's WideAngle.

WideAngle is similar to Rooms, but uses a much simpler interface. Rooms allows you to load specific documents into applications

Continued on page 178

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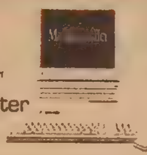

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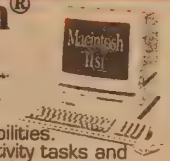

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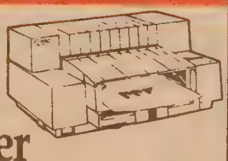

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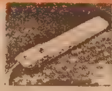

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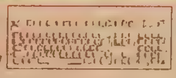

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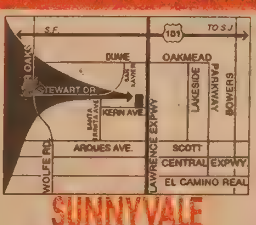

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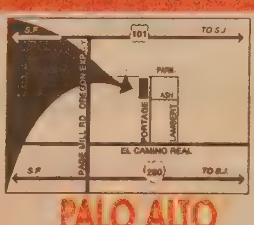

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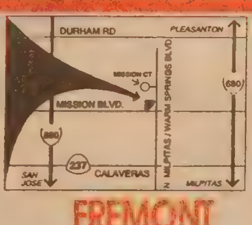

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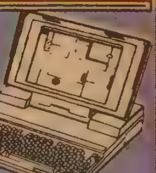

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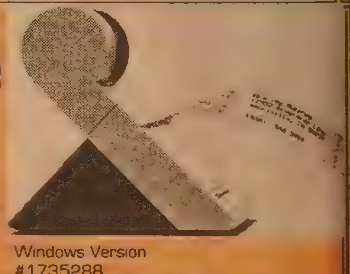

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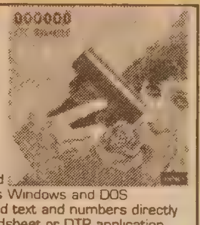

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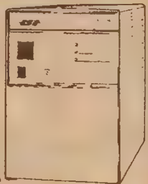

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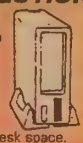

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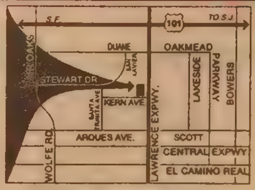
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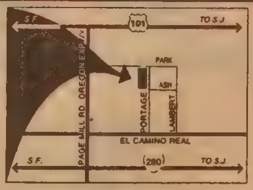
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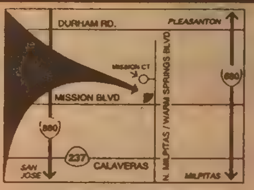
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A) No deductible or hidden charges.
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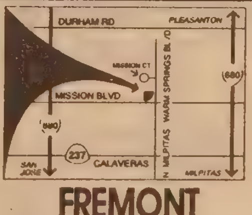
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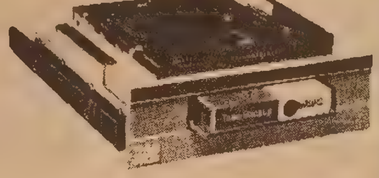

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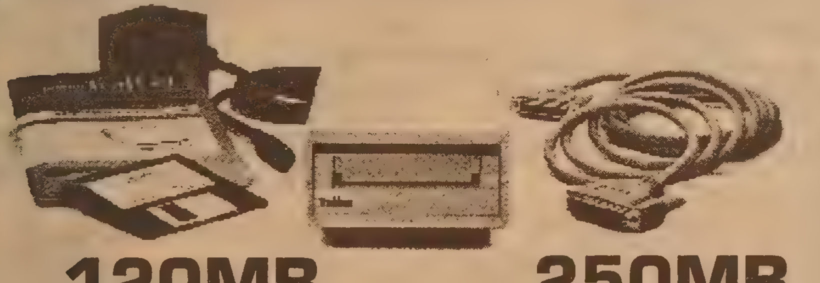

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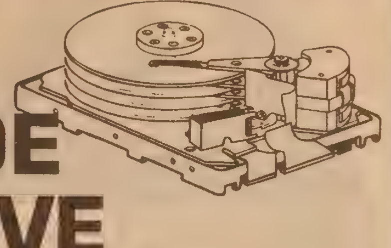

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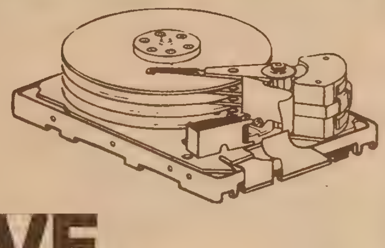

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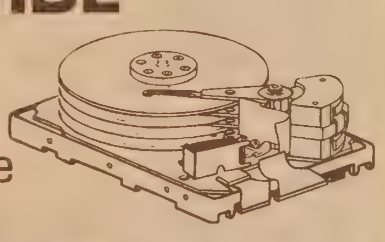

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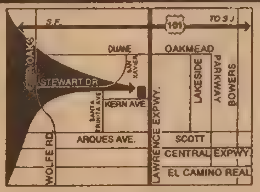
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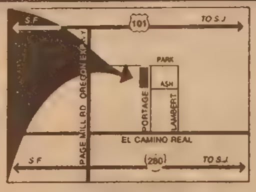
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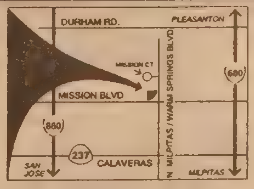
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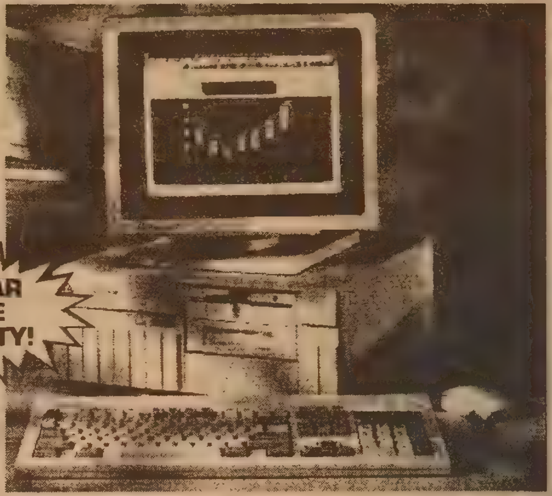

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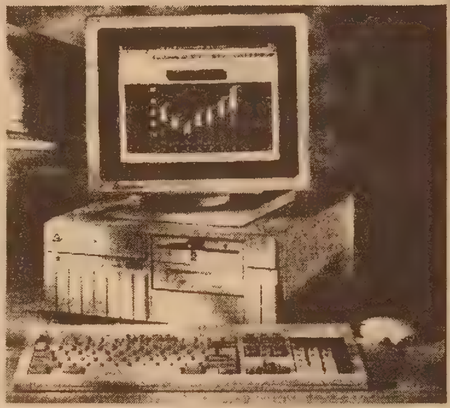

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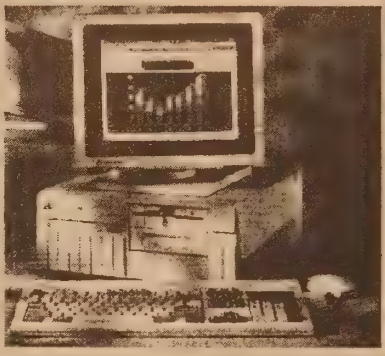
486DX 50MHz



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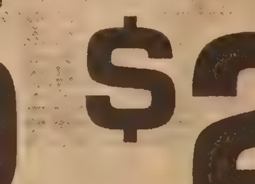

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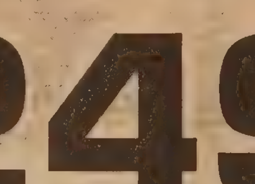

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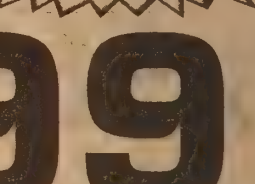

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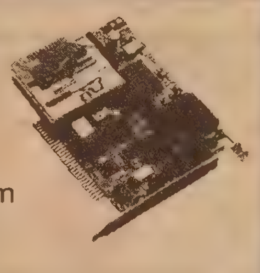

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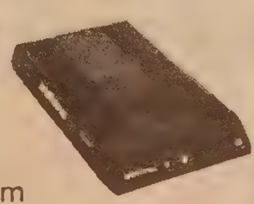

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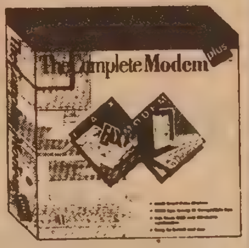
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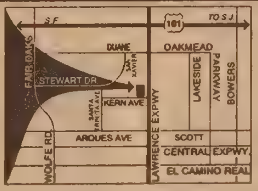
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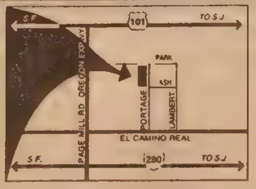
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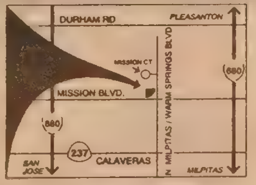
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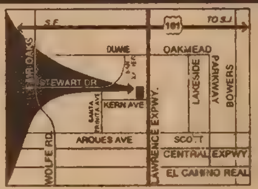
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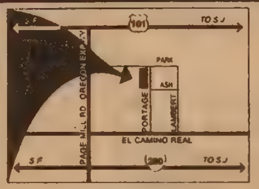
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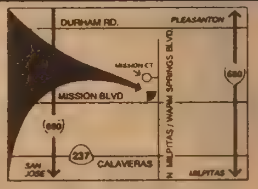
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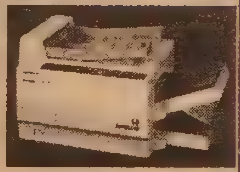

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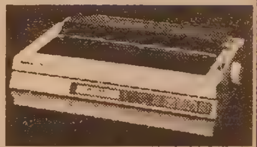

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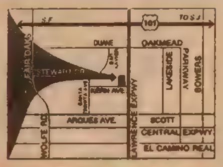
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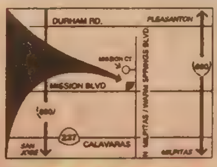
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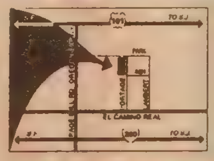
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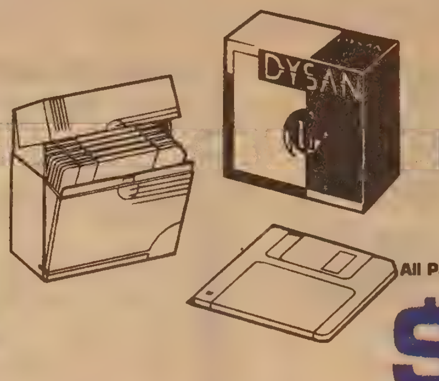

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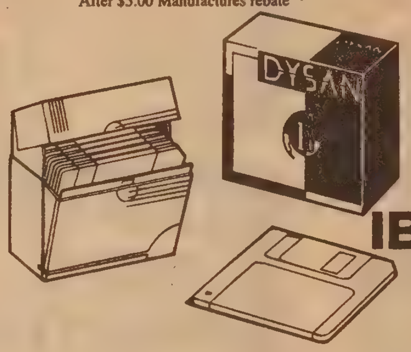

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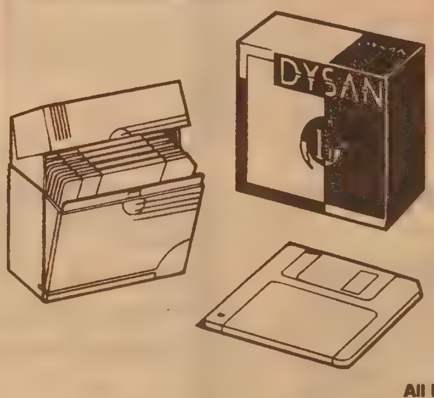

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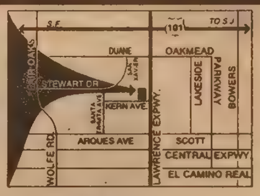
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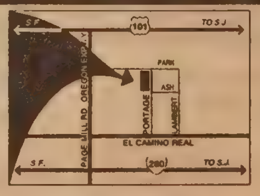
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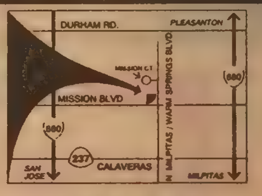
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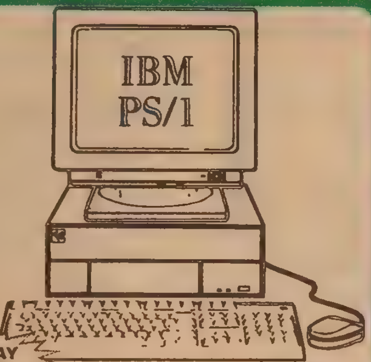

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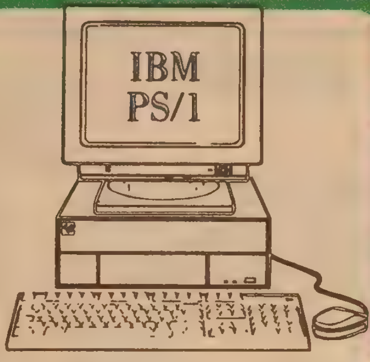

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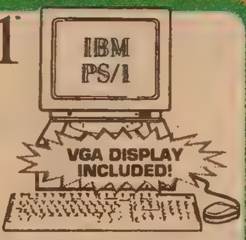

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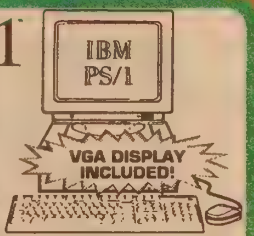

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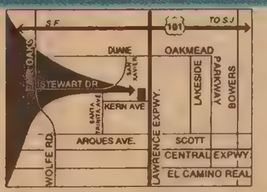

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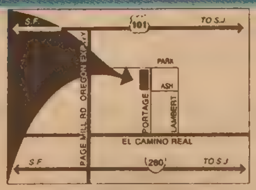

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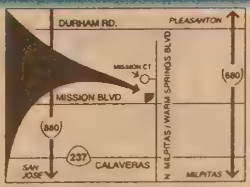

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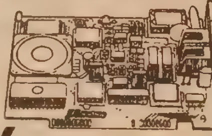

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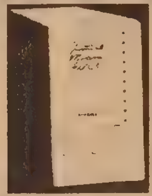

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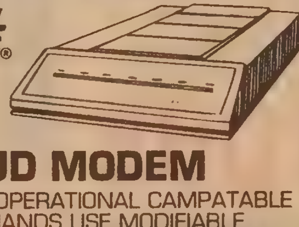

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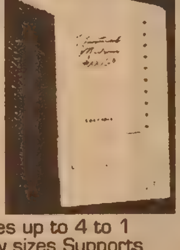

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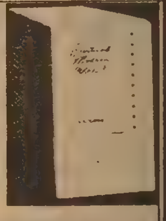

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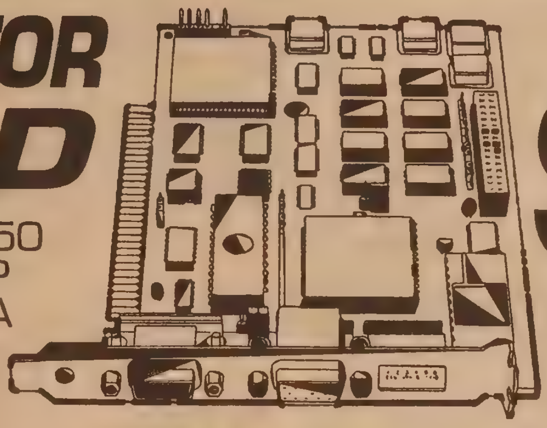

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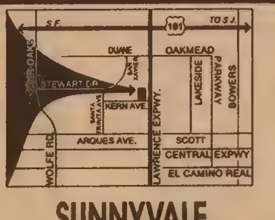
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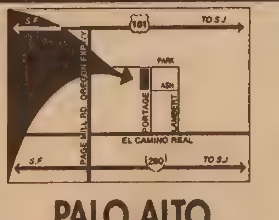
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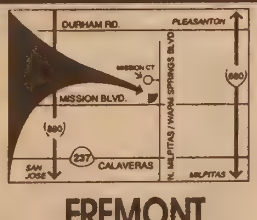
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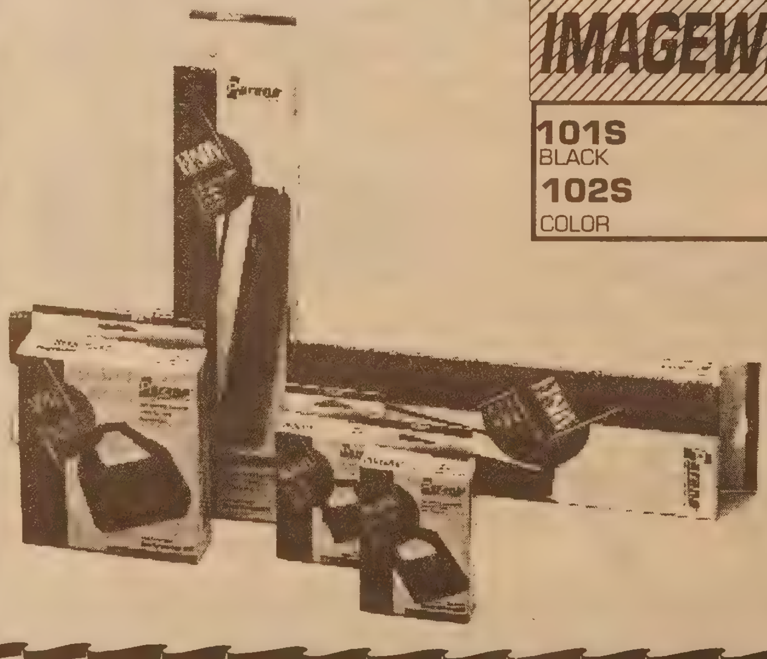

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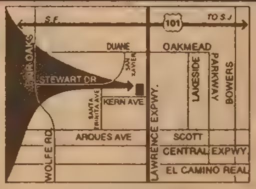
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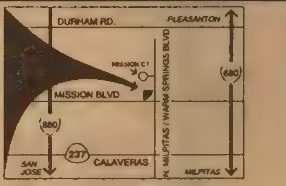
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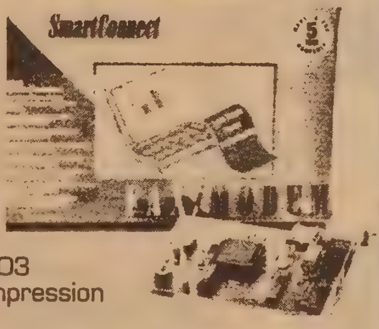
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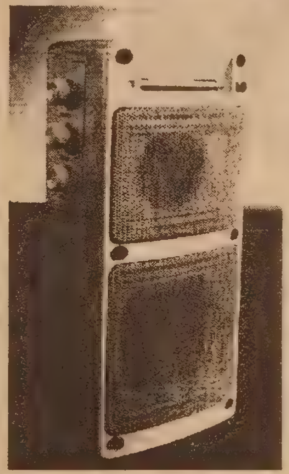

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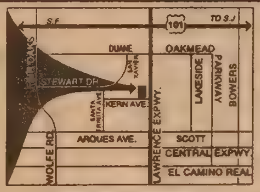
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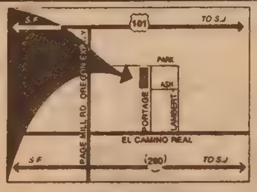
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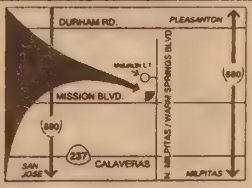
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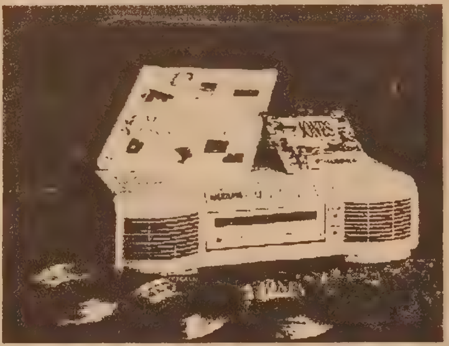

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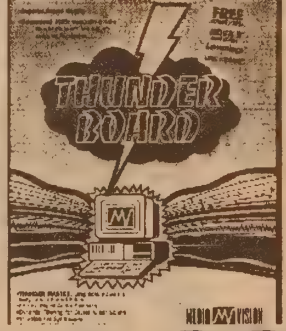
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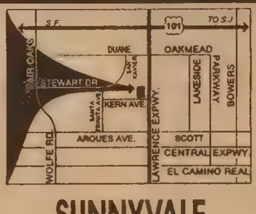
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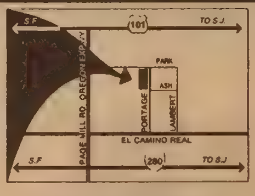
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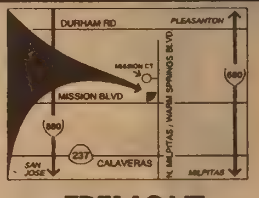
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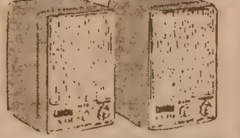

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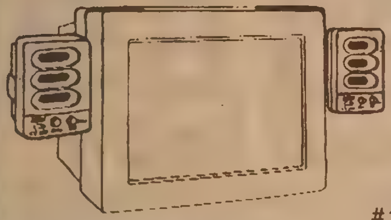

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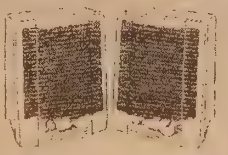

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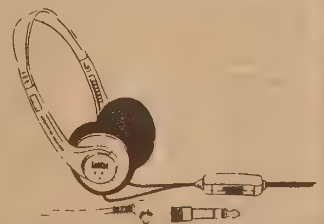

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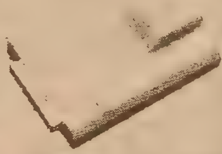

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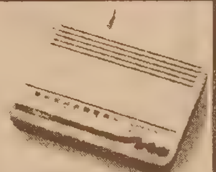

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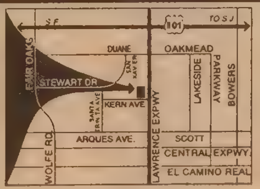
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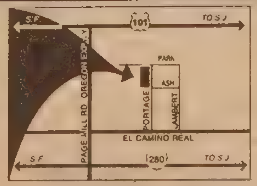
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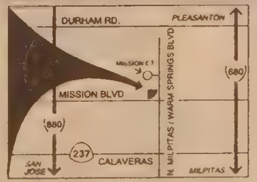
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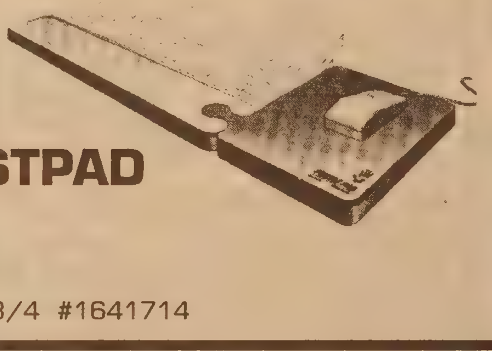

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PowerModem is an internal 9600 bps send/4800 bps receive fax/2400 data modem. It is Hayes compatible and complies with the latest standards set by the CCITT for Fax Group III. PowerModem features the same easy-to-use software as the COMstation line of fax/data modems, including a comprehensive set of user-definable phone books. QuickFax is a convenient desk accessory that permits users to send a quick fax note without ever opening an application. PowerModem features automatic answer and redial features. Both outgoing and incoming faxes can be tracked using an automatic activity log, and transmission options allow outgoing faxes to be delayed to take advantage of lower night rates. In addition, users can customize their own cover sheets, adding a personal message or company logo. Microphone 1.7 is included for data communications.
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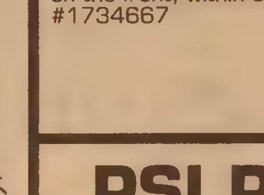

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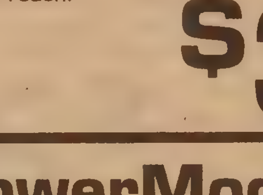

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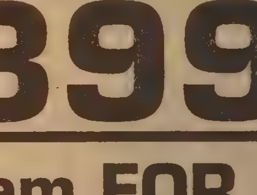

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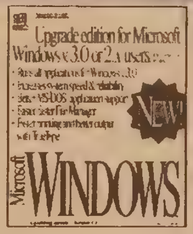

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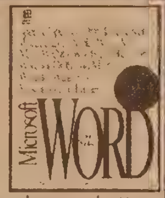

Great news for Wordperfect, Wordstar and other Wordprocessor users, there's never been a better time than now to upgrade to MS Windows applications.

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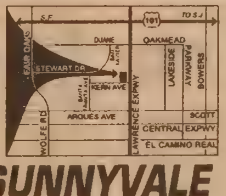

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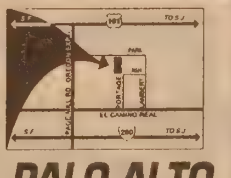

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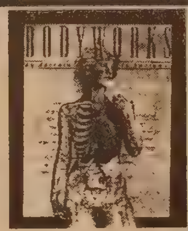

It's an adventure in anatomy! Colorful, comprehensive computer graphics guide you on a journey through the body. With its vast database, BODYWORKS lets you study specific areas from head to toe.

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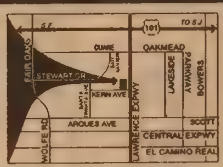

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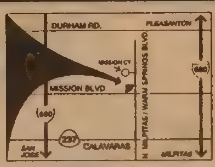

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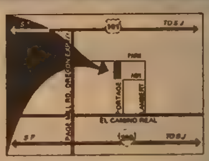

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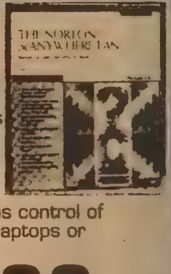

The Norton pcANYWHERE/LAN™ version 4.5 offers fast and flexible PC-to-PC remote computing across a network, or to and from a network via a serial or modem connection. It gives any PC on a network fast and flexible control of another networked PC, as well as control of communications with off-site PCs, laptops or terminals.

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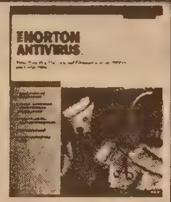

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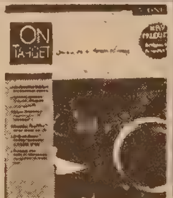

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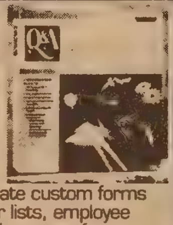

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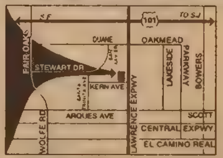

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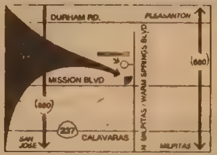

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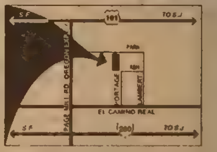

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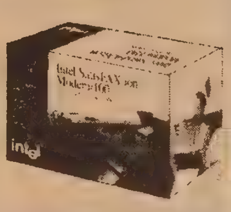
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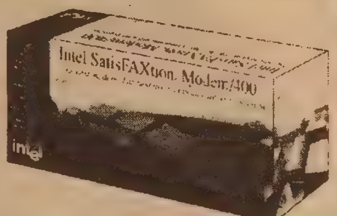
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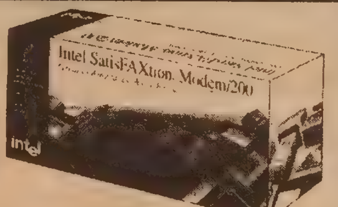
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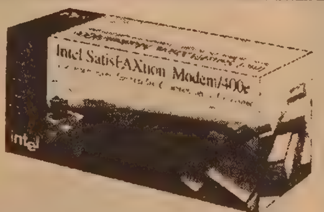
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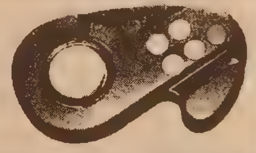

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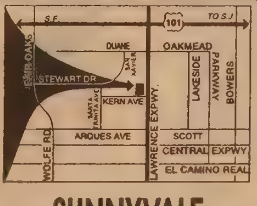
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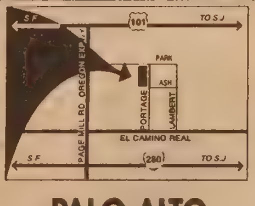
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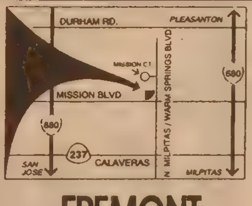
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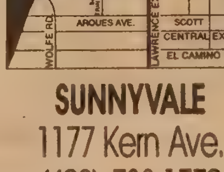
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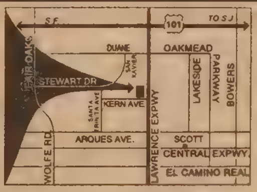

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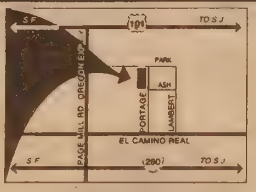

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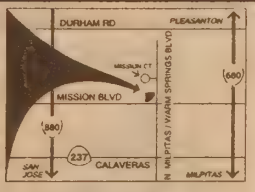

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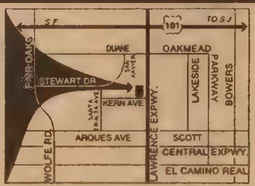

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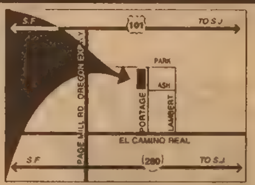

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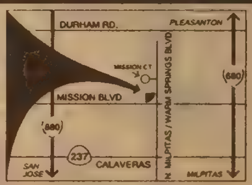

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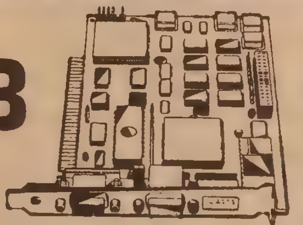

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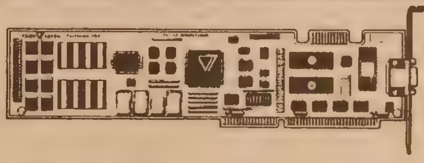

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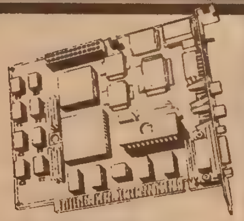

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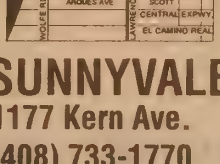

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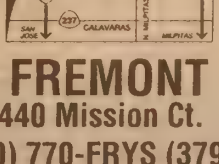

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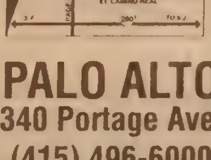

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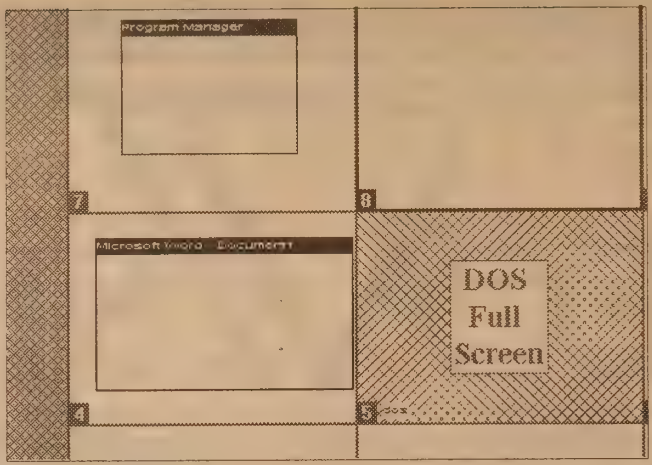

WideAngle lets you create several desktops.

Continued from page 148

automatically when Windows starts. WideAngle lacks this feature, but provides hot keys to switch between virtual desks, rather than forcing you to click on a "doorway icon" with the mouse. WideAngle also provides you with an easily accessible "active window/application" list that allows for easy switching between open applications regardless of which virtual desktop they are loaded into.

Norton's Desktop for Windows is a feature-laden shell that includes a free backup utility, and a wide range of configuration options for screen appearance. Symantec also throws in the heart of the Norton Utilities DOS disk maintenance features. In fact, NDW does an excellent job of meeting most of the criteria listed at the beginning of this survey. It lacks only the capability to provide a multiple screen/virtual desktop.

NEW WAVE—A DIFFERENT APPROACH

Hewlett-Packard's New Wave for Windows, v4.1 is a maverick in Windows control programs. Oddly enough, it causes Windows to resemble IBM's OS/2.

New Wave's "object-oriented" features encourage the user to work with "bundled file objects" in nested folders on the desktop. Programs that have been loaded in previous Windows sessions will automatically restart, maintaining window sizing and positioning; icons for data files may be placed without the restriction of Program Groups or Windows' Program Manager. Mac-like file folders allow you to create nested, project-based directories. Unfortunately, in New Wave, the ideal of creating an object-oriented desktop for new and experienced users alike is not realized in the code.

Version 4.1 of New Wave is up to 50% faster than 4.0, and adds some iconic options to supplement the creation of "work objects." New Wave does not work with ordinary "program" or "data" files. Users must create special "objects" for each application they intend to use under Windows. If you create a document in Ventura Publisher for Windows, all of Ventura's relevant text, graphics, and chapter files are incorporated in a single object.

At its best, New Wave can be managed by a trained MIS programmer to pop up windows and dialog boxes with user-definable instructions for both "application objects" and "system tools." But the novice installing New Wave on a single-user system may not immediately perceive the distinction. New users may become discouraged by the arcane set of steps necessary to really master the interface.

There is no file management system provided for ordinary DOS files; you may, instead, use Windows' original file manager, which does not deal with the New Wave "work objects." New Wave does allow its work objects to be transferred to other New Wave machines on the network, or re-translated into real DOS files through a sequence of pull-down menu commands.

New Wave includes network support for NETBIOS and IPX-based networks. The file management features are designed to send "bundled" objects easily from one New Wave workstation to another. Ideally, one master copy of New Wave may act as file server for client New Wave stations. Routines like the generation of monthly reports or mailing lists may be automated by creating object templates for Microsoft Word, Excel, etc.

The transfer of work to a non-New Wave machine is more difficult than it should be. A trained MIS manager might implement customized pull-down menu commands and icon-based routines for the everyday user. New Wave uses a complicated Macro/Programming language to create "menu tasks" and "Agent Tasks." The Agent programming language is powerful: it allows an advanced user to completely redesign Windows, create custom dialog boxes, screen messages and menus. But the complex and unfriendly nature of the language makes this difficult to impossible for an average user. (Novices may be able to pick up the technique of simply recording and playing back keystroke combinations to create simple Agent tasks.)

New Wave is advertised as a Windows desktop manager, but it is more like a graphical system development kit with support included for its own OS/2-like desktop features.

DO YOU NEED A DESKTOP MANAGER?

In general, the attractiveness of any of these desktop managers increases with the complexity of your Windows subsystem. Users running three to four applications under Windows may continue happily with the file and program management tools included in the basic Windows product from Microsoft. Those who have fifteen or fifty applications to keep track of may find a third-party desktop manager indispensable. ■

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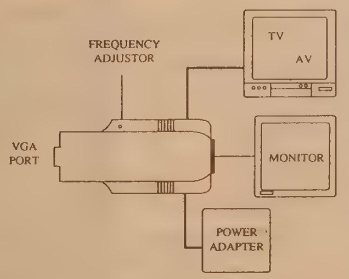

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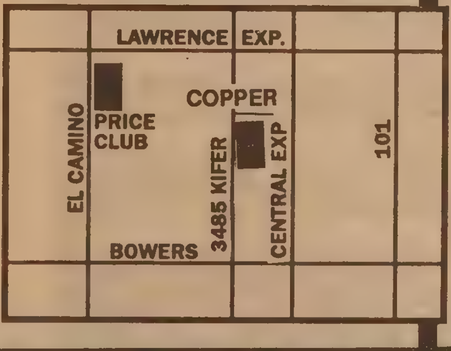

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Your First Computer

So You Wanna Buy A Computer

The 1992 Edition

BY MIKE MARKOWITZ

Since a significantly new "generation" of computer hardware comes along every eighteen months or so, the decision to buy a first computer can be a struggle between today and tomorrow, between impulse buying and deferred gratification; between techno-lust and the next mortgage payment. The fundamental long-term trend in this technology is that the cost of computing power (however you measure it) keeps going down. The longer you wait, the more machine you can get for your dollar.

WHO NEEDS IT?

Of course, the longer you wait, the longer you will be missing out on the benefits the technology promises to bring into your family, your business, or your life. With care, luck, and a little help, you may avoid the stress, frustration, rage, and disruption that often accompany a first computer. No Pain, No Gain.

What can you do with a computer? For most users, a computer is a replacement for two obsolescent appliances: the typewriter and the desktop calculator. If you never had much use for those items, you may not have much need for a computer. For many users, a computer is a communication tool, an extension of the telephone. For some creative users, a computer can be a drawing board, a musical instrument, or an animation studio. For almost anyone with a little time and motivation, a computer can be a tool for learning.

WHAT YOU NEED

Buying a computer system is similar to buying a stereo system in that you need to put together a harmoniously matched set of components. In the stereo world, however, you can usually assume that a new tape deck will recognize your amplifier, and your speakers will play any type of music. With computers, it is never safe to assume anything.

A desktop computer system starts with a box. Computer people like to call this a System Unit. Inside the box you typically get a power supply (measured in watts), a "motherboard" which may have a number of "slots" to put useful things into, some memory chips (measured in megabytes), a hard disk (also measured in megabytes), and one or two floppy disk drives. Modems, a computer's link to a telephone line, can be inside the box or outside the box, depending on the whim of the manufacturer. Outside the box you need to add a video monitor (display), and usually some kind of printer.

> **Buying a computer system is similar to buying a stereo system in that you need to put together a harmoniously matched set of components. In the stereo world, however, you can usually assume that a new tape deck will recognize your amplifier, and your speakers will play any type of music. With computers, it is never safe to assume anything.**

You also need a keyboard. The basic trend in keyboard manufacturing is that as the years go by, they have gotten cheaper and more flimsy. If you have ever used an IBM Selectric typewriter or an Apple IIe computer, you know how good a keyboard can feel. If you spend a lot of time typing, you should shop around for a really good third-party keyboard. Chances are, the one that came in the box with the computer will be disappointing.

You can add many other kinds of wonderful devices (peripherals) like scanners, drawing tablets, and CD-ROM players, limited only by your budget and the creativity of the Free Market.

If you are getting a whole bunch of computers in one place, you probably need some kind of network, a subject of Baroque complexity, beyond the scope of this article (indeed, beyond the scope of this writer).

CHOICES, CHOICES

For most first-time buyers, the basic decision about a first computer can be boiled down to two questions:

Macintosh or MS-DOS?

Portable or Desktop?

The question of Mac vs. DOS should be understood as a theological rather than a technical issue. Asking which is better is like asking which religion is True. The answer you get depends on who you ask.

MS-DOS systems (which we used to call "IBM PC compatibles") represent over 85% of the world's "installed base." MS-DOS is the standard for business and most industries. The selection of available software titles and hardware add-ons is vast beyond imagina-

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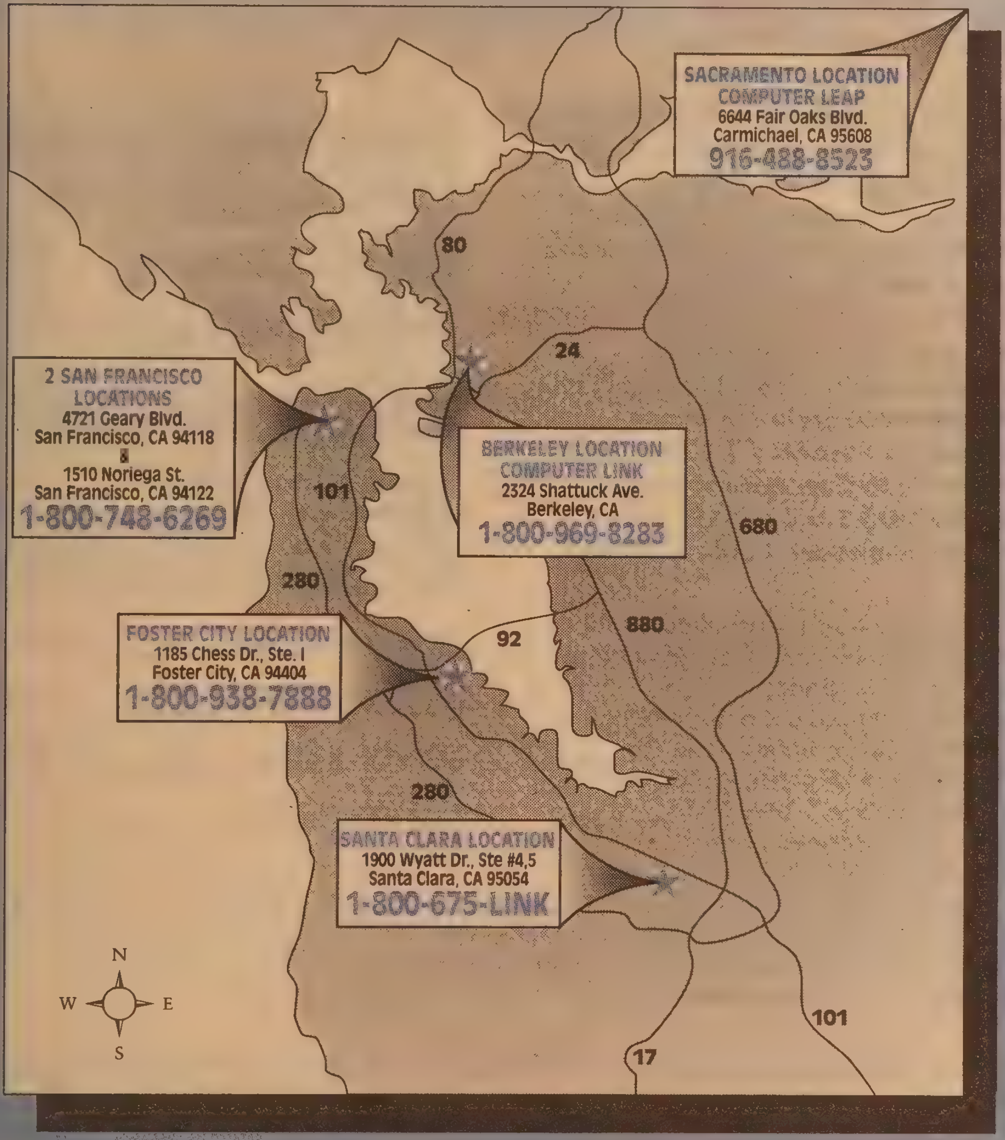
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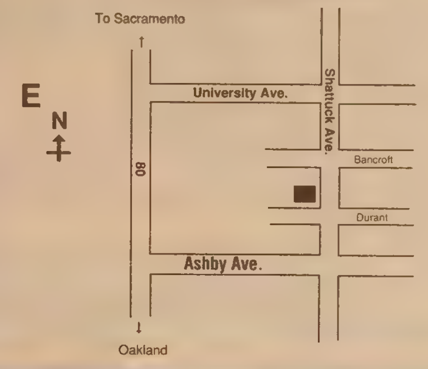
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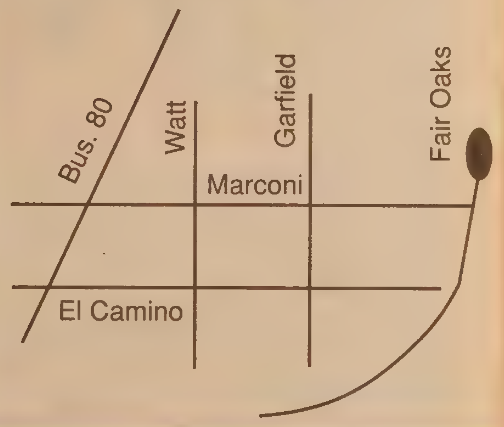
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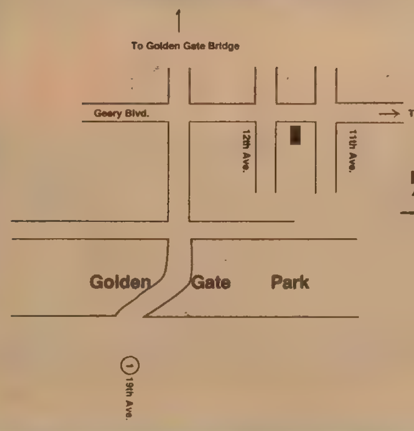
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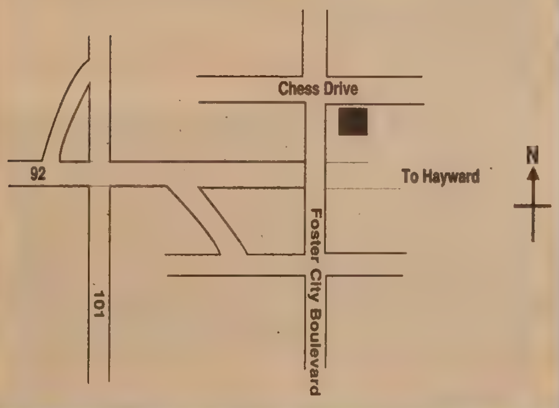
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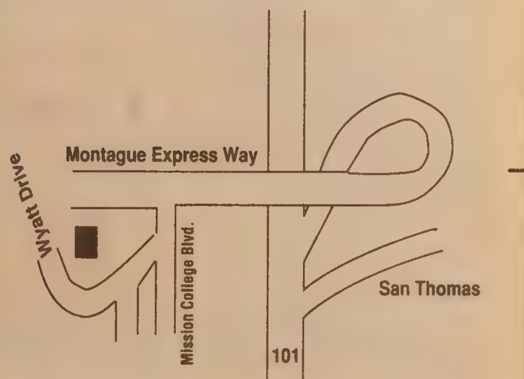
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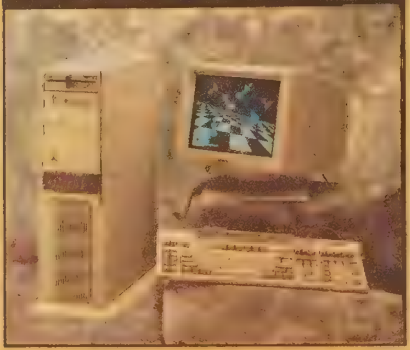

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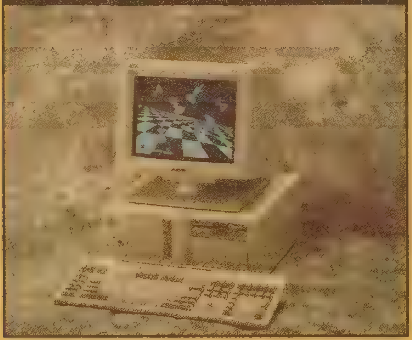

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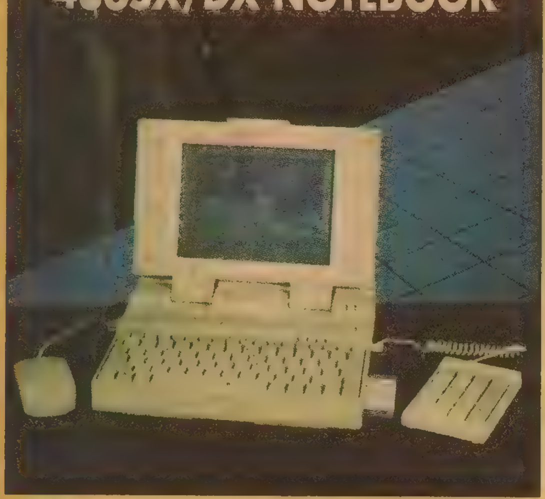

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tion. There are hundreds of different brands, including dozens that are reputable, successful, and respected.

Macintosh systems are much easier to set up (computer people say "configure"), and generally easier to use. They tend to cost more for equivalent levels of performance, but Apple has been moving toward more aggressive pricing in order to gain market share. Macs tend to be favored by educators, creative artists, and musicians. The selection of games and entertainment titles is poor. It is much more difficult to learn to program for the Mac operating system.

Until quite recently, if you wanted a powerful and versatile computer, a portable system was not an option. You pay a premium for portability—anywhere from 30% to 200% more than what you would pay for a desktop unit of comparable performance. If you travel a lot, move frequently, or live in cramped quarters, a portable may be cost-effective.

ABOUT PERFORMANCE

The heart of an MS-DOS computer is a chip made by Intel (or one of its competitors). Each successive generation of chip offers greater speed and computing power. These are the generations of Intel microprocessor chips:

8088 and 8086	Original IBM PC and PC-XT, now generally obsolete
80286	PC-AT, obsolescent
80386	Current standard for desktop systems
80386 SX	A down-rated, lower-cost version
80386 SL	Special low-voltage version for portables
80486	Very high-performance, rapidly becoming the standard
80486 SX	A down-rated, lower-cost version

The heart of a Macintosh computer is a chip made by Motorola. Each successive generation of chip offers greater speed and computing power. These are the generations of Motorola microprocessor chips:

68000	Original Mac, used (until recently) in low-end systems
68020	Original Mac II, now obsolescent
68030	Current standard for most Macs
68040	Very high-performance (Quadra series)

Within a generation of chips, there are increments of performance based on the "clock rate" (measured in megahertz or MHz). Faster is better and more expensive. For example, a 80386 chip may be rated at 25, 33, or 40MHz.

One of the many design factors that influence the performance of a microprocessor chip is the "width" of the "bus"—the data paths that connect the chip to other parts of the computer. Earlier generations of chips used an 8-bit or 16-bit bus. The latest chips use a 32-bit bus, of tremendous potential capacity, although existing software cannot yet exploit all of this potential. The 80386SX is a sort of a low-cost hybrid chip using a 32-bit data bus on the chip, but limited to a 16-bit bus for connection to the rest of the computer.

> **The question of Mac vs. DOS should be understood as a theological rather than a technical issue. Asking which is better is like asking which religion is True. The answer you get depends on who you ask.**

Many systems have a socket for a specialized chip called a math coprocessor or "floating point unit" (FPU). The math coprocessor chip handles the workload of certain complex computations, leaving the microprocessor free to do everything else. The performance boost depends on the software you are using; in word processing, you would not notice any benefit, but in a 3-D drawing or statistics program the coprocessor would help tremendously. Each type of microprocessor needs its own specific math coprocessor—for example the 80386 uses an 80387, and the 68000 needs a 68881. In the newest generation of chips (68040 and 80486) the math coprocessor function is built into the microprocessor itself.

ABOUT MEMORY

A few years back, there were inherent limitations on the amount of memory most computers could use. MS-DOS computers could only use 640K of base memory, and typical Macintosh models were limited to 4 or 8MB of total memory. More memory allows programmers to create bigger applications, and users to create bigger documents with more fonts, elaborate graphics with more colors, and vast databases with more errors.

With the latest systems, however, the practical limits are set by how much you are willing to spend. The latest 32-bit microprocessors can, theoretically, address hundreds or even thousands of megabytes of memory, if the programmers can figure out how to make the system software recognize it, and the engineers can figure out how to wire it all up.

Right now, at least 4MB of memory is a reasonable minimum for MS-DOS or Mac systems; expect this to double by next year. It may double again every year for a while, but this cannot go on for too many doublings, or all the sand on Earth would have to be fabricated into DRAM chips, and beach people would object.

Nobody ever regretted buying too much memory.

ABOUT STORAGE

Personal computer users are facing a serious storage crisis, with no easy solution in sight. Average standard hard disk size tends to grow "arithmetically," ramping up by 20MB every generation, with prices dropping at a similar rate, so the same dollars will buy you more disk space. Program file size, however, tends to grow "geometrically," doubling every generation. An 80MB hard disk, which seemed like a boundless ocean of storage two years ago, now seems barely adequate for a basic set of business applications.

One stopgap measure is an "on-the-fly" file compression and decompression utility. On the MS-DOS side, Stacker is the most popular title, while Disk Doubler and several imitators have found favor among Mac users. At the cost of slightly slower disk access times you can pack more stuff onto the same hard disk.

Another, more expensive stopgap is the removable cartridge hard disk. The Syquest mechanism is popular with Mac users, while the more expensive (and reliable) Bernoulli mechanism has both Mac and MS-DOS versions. A cartridge is like a huge floppy disk, holding 45 or 90MB. When one cartridge fills up, you simply pop in another.

If you are buying an MS-DOS system, you still need both kinds of floppy disk drive; the little 3.5" and the big 5.25". A new Extra-High Density 3.5" floppy disk format (EHD, which puts 2.88 MB on a disk) is gradually gaining acceptance, but, for most users, it's not worth paying extra for.

WHERE TO BUY

After you have decided what to buy, you may still need to make a decision about where to buy it. Fierce price wars are raging through

Continued on page 262

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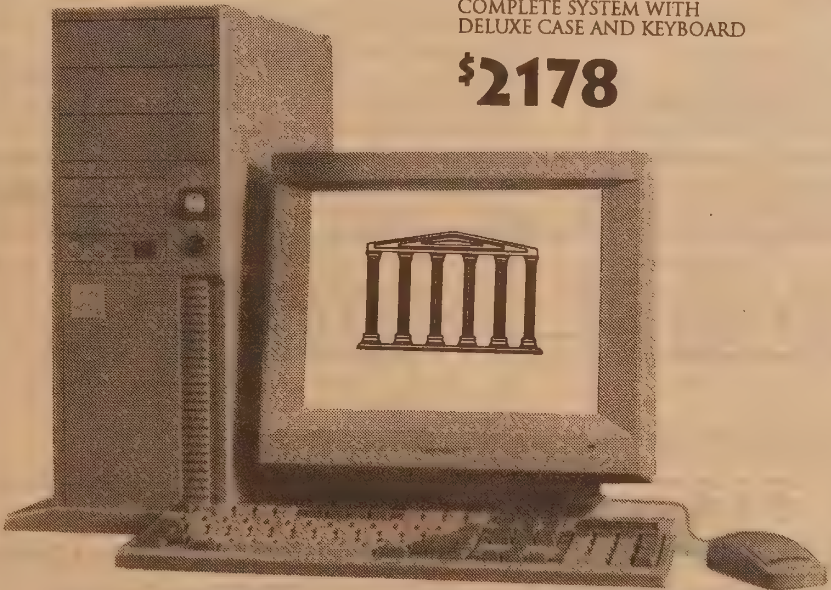

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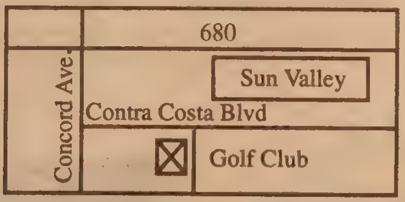

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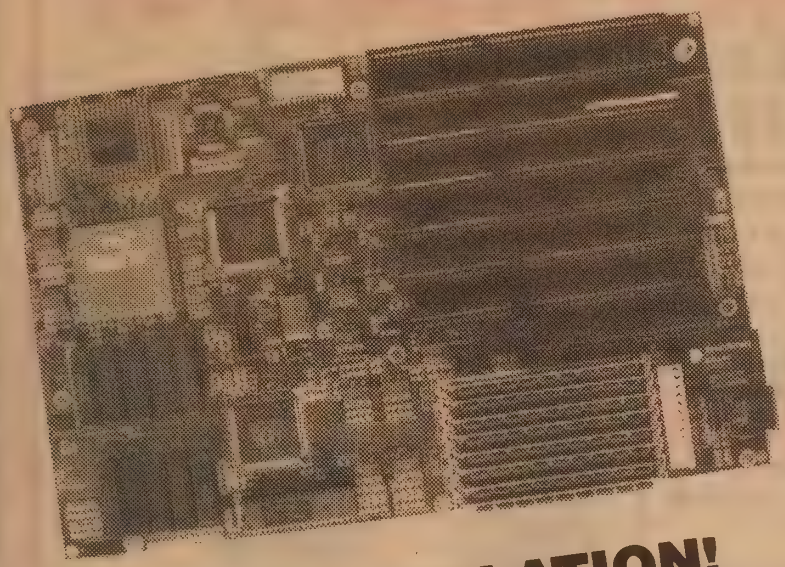

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MEMORY TYPE	SIMM	SIMM
ON BOARD MEMORY	32MB	32MB
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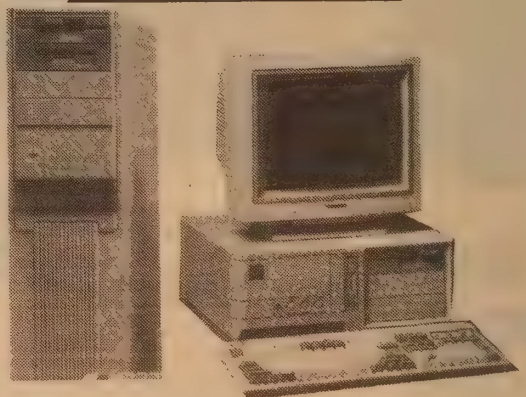

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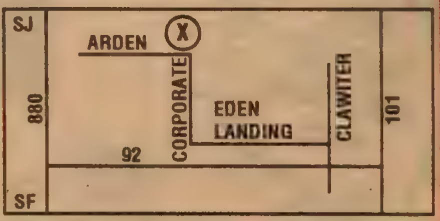

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Davidson And Associates:

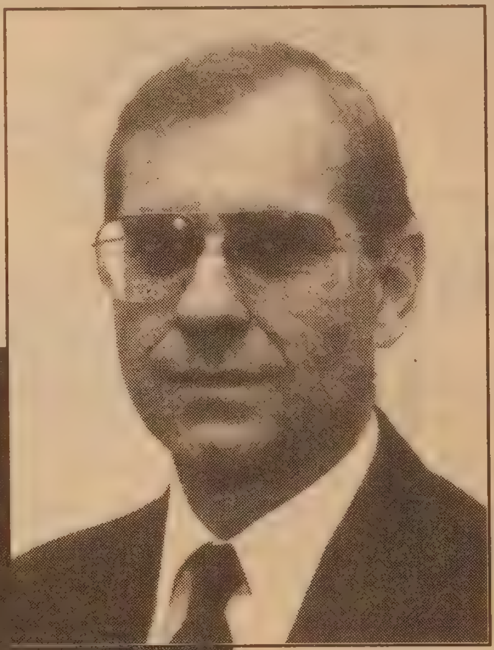
Ten Years Of Educational Excellence

BY MIKE MARKOWITZ

Torrance, California, is an industrial landscape of oil refineries, punctuated by office parks. That's where you'll find the headquarters of Davidson and Associates, in a striking new building that stands out from its concrete-box neighbors. In December, Davidson will celebrate its tenth anniversary; remarkable longevity in the software business. The company has published a steady stream of award-winning programs: "teacher-designed and student-tested." The best-known titles include Math Blaster Plus (over a million copies sold), Alge-Blaster Plus, Spell It Plus!, and Word Attack! The current catalog lists thirty products, mostly versions for MS-DOS and Mac, but also a few for Apple II, Amiga, and Commodore 64/128.

Davidson also handles marketing and distribution for several affiliated labels (Earthquest and Lawrence Productions). In 1991, Davidson acquired First Byte, a small Santa Ana software firm with proprietary text-to-speech technology. Educational Resources, one of the leading distributors of educational software, was merged into Davidson in 1992. As a result, Davidson is now the largest supplier of packaged software to the US school market. The consumer market for educational software has continued to grow despite the economy, gaining shelf space at the expense of games and pure entertainment titles.

In 1980, teacher Jan Davidson was running a nonprofit tutorial program, specializing in SAT preparation. She discovered that many students had difficulty completing SAT practice tests in the allotted time. She experimented successfully with some Apple II computers, but realized that much of the software available really wasn't very good. There were bugs, spelling errors, and enough poor grammar to infuriate any English teacher, but even worse, the programs rarely matched her educational objectives. She decided she could do better; she hired a programmer and rented space in an abandoned school. In 1982, Apple published Davidson's Speed Reader program under its "Special Delivery Software" label. At the end of that year, Davidson and Associates was formed to publish an IBM version of Speed Reader. That first program has been kept up to date; a Windows version was released in September, 1991.



One problem is that teachers can't always get the hardware they need to run the products, like VGA or audio cards.

By 1987 the company had grown to about thirty employees. Today the company employs over 250, and has plans for continued expansion.

One of Davidson's most ambitious new products is English Express, a complete multimedia curriculum package for teaching English as a second language at levels from fifth grade to adult. Both Macintosh and MS-DOS versions have been developed, each supported by videodisc or CD-ROM. The CD-ROM includes over fourteen hundred color photographs grouped into sixty-seven categories such as Time, Weather and Seasons, Fast Food and Snacks, Occupations, Sports, Emotions, and The Supermarket. Students can see real-life images, hear the corresponding words and sentences, record their own voices and play them back for comparison with the natural speech of professional male and female narrators. English Express can be configured for use in a classroom or computer lab, with typical configurations priced at $5000 to $10,000. English Express was one of the first multimedia packages to win statewide adoption by an education department—in Utah.

Davidson's Story Club is a second multimedia product planned for release late in 1992. Focused on language development for the elementary grades, the program uses a variety of folktales from around the world to help students enjoy reading, writing, and oral communication. According to the designer, Leslie House, storytelling is an ancient and universal kind of literature, that seems to have immediate and direct connections for kids from all cultural backgrounds.

At many software companies a visiting journalist is greeted with the sort of paranoia that Saddam Hussein reserves for UN nuclear inspection teams. At Davidson, the atmosphere was unusually open and relaxed; we were shown a variety of projects under development and allowed to talk with product managers, programmers, and graphic artists. More than just a family business, this company seems like a big family.

Jan Davidson, president, presides over her software empire from an elegant wood-paneled office decorated with Chinese porcelain and family pictures. She is past president of the Software Publishers Association, and was

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also a founder and director of Computer Learning Month, now called the Computer Learning Foundation. She earned a Ph.D. in American Literature and a Masters in Communications from the University of Maryland. She taught for fifteen years before getting into the software business. Jan and her husband Bob, who is chairman and CEO of the company, have been married for twenty-six years and have three children. We spoke with her twice, over the course of several months.

Jan Davidson: “Teachers want tool-type programs rather than games. They love graphics and sound, especially text-to-speech.

■ ■ ■

How has the process of software development changed since you started in this business?

Product teams used to be two people; now a team is eight people with matrix management. I've avoided movie language, like Producer and Director. We're not in the entertainment business.

What do you see as the most important trends in your market over the next few years?

Computers are going to be a bigger part of schools, and that will spill over into the home. We will see more home-school connections. The technology is becoming more accessible and powerful. Right now there is a split between school software products and home software products, but we will see more common features, since they are designed for the same audience.

What do you hear from teachers about their wish lists for software?

Teachers want tool-type programs rather than games. They love graphics and sound, especially text-to-speech. One problem is that teachers can't always get the hardware they need to run the products, like VGA or audio cards. It's a dilemma for us: you can't just design software for high-end systems, but you can't abandon users at the low end.

There seems to be a tendency for school computers to be monopolized by boys. What do you do to ensure gender equality in software?

We're very proud of what we've done to balance the presentation of male and female characters. In Zoo Keeper, for example, we started out representing the villains as humans, but they were redrawn as creatures that aren't identified with any gender or ethnic group. When we test products with children, we make sure we have girls and boys in the test group.

Books and other media for kids are increasingly dealing with controversial topics like family issues, violence, substance abuse. Do you see any market for software that addresses such topics?

In 1990 we published a product for schools called TEAM, vocabulary and reading software for “at-risk” students. It dealt with making choices in real life situations. We try to focus on positive things; but I'd like to do something related to substance abuse...

As programs keep getting bigger, we seem to be reaching a crisis point in software file size. Are we going to see program packages with twenty floppy disks soon?

This is a clear manufacturing, development, and distribution problem. We kept Zoo Keeper to a maximum of seven disks; we didn't want to cut down on the number of animals. We are hoping for technology to manage the problem, but CD-ROM has to get faster to achieve this. Users want more graphics and sound.

■ ■ ■

Bob Davidson has a law degree from George Washington University, an MBA from UCLA, and an engineering degree from Purdue. He was on the fast track to becoming the CEO of a major engineering and construction firm in 1989 when he left to help his wife run her growing software company. “Jan was being consumed by the business side of the operation,” he says. “She needed a full-time business manager.”

How is the company organized?

It's still a family-owned business. Our entire initial investment was about $6000. We don't have any venture capital, and we don't intend to get any.

At a time when so many companies are leaving Southern California, you seem to be making a major commitment to staying in the area. Why?

This is where we live. Historically, this is a pool of technical and artistic talent, because of the film industry.

We're certainly being adversely affected by things like the California Workers' Compensation laws and government regulations like the AQMD (Air Quality Management District). There are a lot of silly bureaucratic rules that cost us money. And we're always being wooed by other states...

Are you seeing any major changes in the way software is advertised and sold, like a shift from buying a package in a store to mail order distribution?

I see no paradigm-shift in the short run. As the installed base grows, it will be more economical to do direct marketing, but we're linked to the market penetration of the hardware. Some day we may see distribution over cable, like pay-per-view TV, but it's hard to predict what the consumer acceptance might be. Over the next few years we'll see more ways to buy software, but shelf business will not disappear.

How do you decide what to publish? How much is intuition and how much is market research?

Jan was originally a teacher, not an inventor. She designed software to solve real needs in her tutorial center. We don't follow MBA marketing plans. Our culture at Davidson is customer-driven; we use surveys, focus groups, interviews, etc. The problem is that customers are aware of technology that's about three years old—they don't know what we can do with today's technology.

Your business depends on the future of educational technology, but most public school teachers these days seem to be deeply pessimistic and discouraged—do you see any rays of hope?

Absolutely! I'm not nearly as depressed. There is a perception that K–12 school budgets are down, but in California this year, for example, budgets were up 4–5%. We find that the morale of school officials is poor, but our school business is booming; we're selling $10,000 packages into schools. There's a growing understanding of the validity of the technology...

There are about twenty-six “adoption” states, where a software program or multimedia package could be adopted just like a textbook. In the long term, we're going to see a shift in instructional material from books to multimedia. ■

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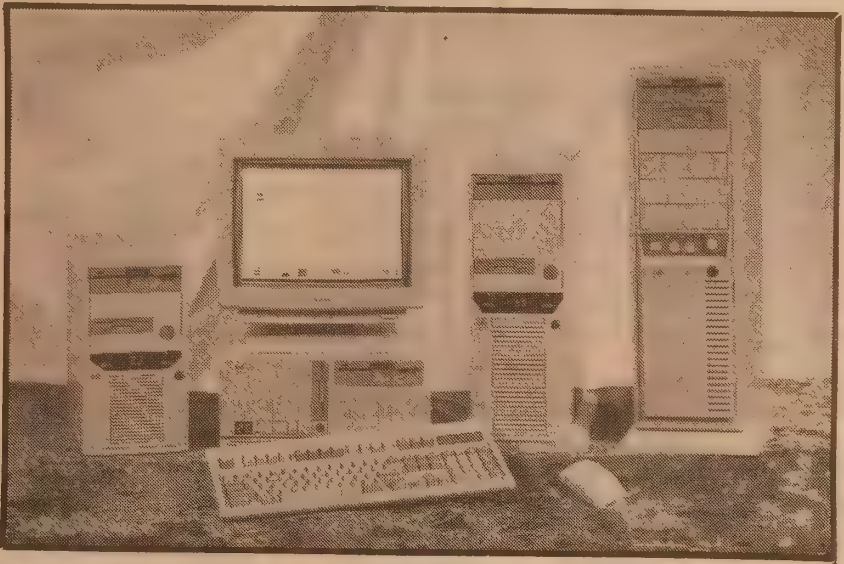

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PCComputing

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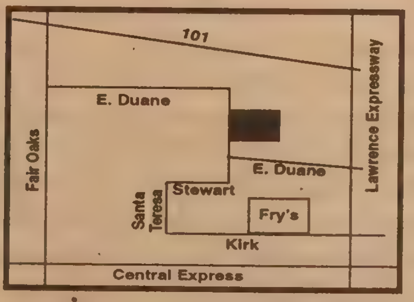

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Computer Education With An Edge:

Richmond High's Computer Occupations Class

BY ANNA COUEY

Richmond, California, is a community where poverty is often multi-generational and hopelessness is at desperately high levels. Richmond is also home to one of the most sophisticated high school computer programs in the country.

You've probably heard about the poverty, the gangs, the violence, and all that's there. But at Richmond High, you find students who, despite their acute awareness of the negative conditions that surround them, express a surprisingly positive attitude about their place in the future. Richmond High's Computer Occupations class plays an important role in providing them with skills that give them an edge in our increasingly technological society.

In Richmond High School's Computer Occupations class, students help each other learn to use a variety of hardware and software; and integrate computer-based work into the rest of their classes.

FACING TECHNOLOGY

Typically, high schools in the United States have antiquated computers. Concurrent with the general low standard of public education (and almost nonexistent budgets for teaching), technological education is often woefully inadequate in preparing the "workforce of the future" to enter the marketplace. While interesting projects are using the Internet in K–12 education, for instance, such projects are anomalies. Given the overall climate that pervades even schools in wealthy districts, Richmond High's Computer Occupations setup is truly remarkable. What's even better is that it has a track record of success stories for underprivileged students.

When you walk into Richmond High's Computer Occupations class today, you find yourself in a large room containing thirty-six computers networked to a Sun SPARCstation. The computers are deliberately varied systems—there are some dumb terminals and 286s, along with quite a few X-Windows terminals, 386s, and pure UNIX systems. A laser printer is connected into the network, and the scanner next to it is about to be. The Sun is a UUCP host, with Netcom assisting and providing an Internet link, and it receives USENET news. All students have their own Internet email account. There are (or will soon be, as the rest of them get installed) enough terminals for each student to have one.

The Computer Occupations class is funded by Richmond School District's Regional Occupation Program, and is the brainchild of instructor Les Radke. The class got its start in the 1970s, and has consistently focused on teaching students how to use equipment that's prevalent in the workplace, but not usually covered in schools. Today, Richmond High is one of the few high schools in the nation with a SPARCstation. Says Radke, "There are very few places you get training on this entry level in UNIX or on a Sun system or training in LAN management. Almost all the places teach IBM." So, while there are plenty of DOS-oriented jobs out there, there are also many more applicants competing for them.

He continues, "We try to pick computers to try to give students an edge, because they have enough against them anyway. That edge comes from being trained on equipment that's very prevalent out there, but few are training people on it."

Radke's students also develop an edge by learning to be what he calls "computer janitors"—people who can walk into an office with any kind of computer, and be able to install it and run it. While he makes sure his students learn the software programs that dominate the workplace—e.g. WordPerfect, Lotus 1-2-3, FoxBase, as well as telecommunications and graphics programs—Radke makes a point of having different machines with different operating systems and different software in his class, and of rotating the students from one to another.

Practical experience backs up this philosophy—several of his students have been hired in offices where their skills have quickly made them indispensable employees. Says Radke, "They can go into a situation like a travel agency (where some people place)—and there's a computer there, and very few people know how to use it other than in the crudest way. If a laser printer comes in, the student will actually know how to set up the printer drivers for the new printer. When they do that, they're looked at as something special, and generally people want to keep them. And that's happened."

Computer network access has been an integral part of Computer Occupation since the beginning, when the class linked via teletype to the Lawrence Hall of Science. It proved its value as an educational tool early on. Radke says, "One student was aphasic, and was misdiagnosed way back in first or second grade, so nobody had diagnosed him as aphasic, and he was in the lowest level courses here. He got on the computer and was very, very interested in it and started learning a lot. The problem is that his speaking ability was almost nil, which means he was relegated to the lowest level courses. With the computer we could see that he was interacting in a really good way. We finally realized something was wrong; a reading teacher tested him and found he had college level reading skills, and from there we found out that somehow he slipped through the cracks, was aphasic all these years, should have been in a special program to handle him..."

Today students learn how to receive and send electronic mail, to navigate USENET for news, to participate in KidsNet, and to transfer files using ftp. While these activities teach them search and retrieval skills and encourage them to read and write, the real value of the network is the access it provides to the world outside of Richmond.

DEVELOPING A PARTNERSHIP ACADEMY

As part of Regional Occupation Program, the Computer Occupations class is open to adults as well as high school students, though this year there are too many high school students to leave room for adults. Radke's current classes are filled with sophomores, juniors, and seniors who come from the Partnership Academy, a program for "at-risk" students who are not performing at grade level or to their potential. Partnership Academy students have a smaller class size than the norm—twenty-five to thirty students instead of forty—and they travel from class to class with each other.

The principal of the school, Al Acuña, is working with teachers to restructure the

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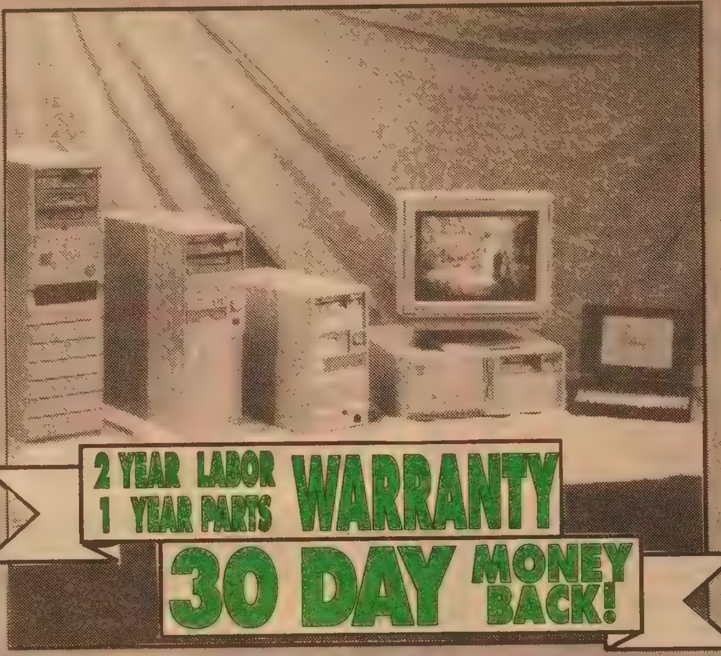

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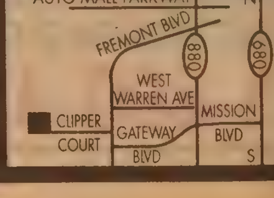

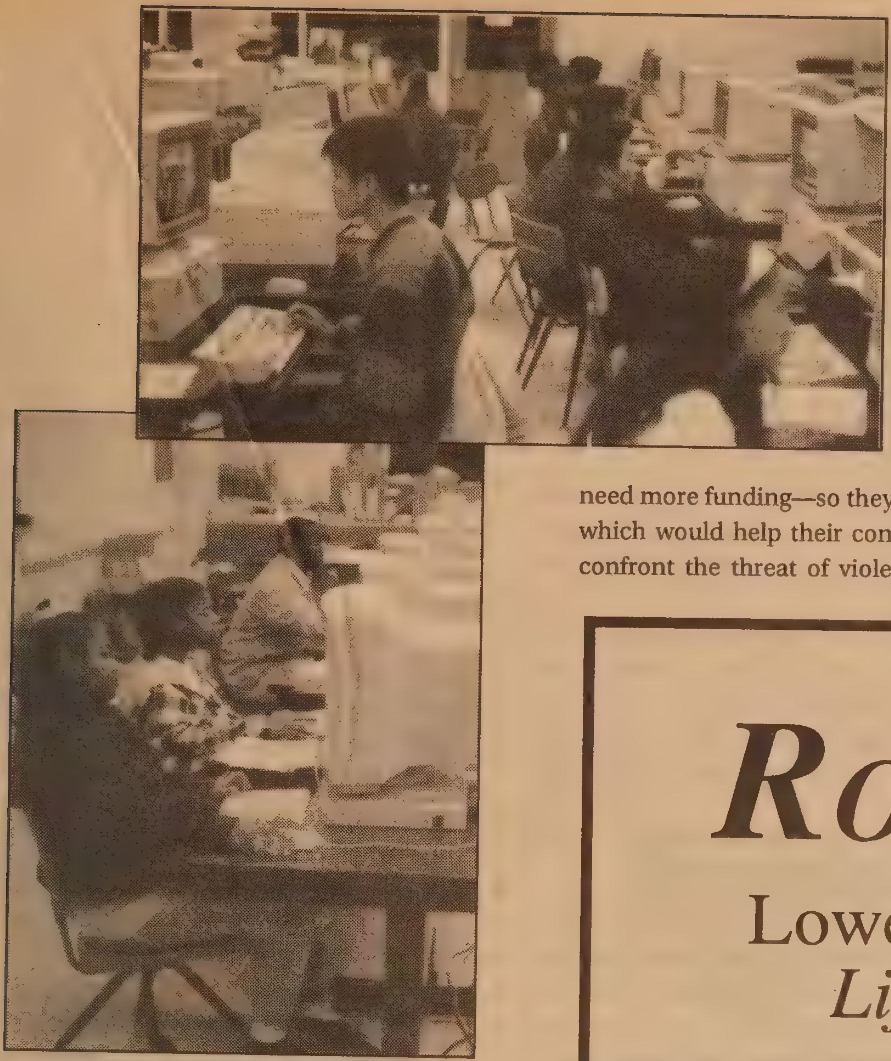

school so that all students will be in an occupational academy. He is encouraging the teachers of the classes the students attend to integrate their curriculum with that of the computer course. For example, students could use the computers to create a report for their social sciences class, which would also be used to develop desktop publishing skills in the computer class and writing skills in English.

Ironically, being "at risk" doesn't have much to do with the students' level of intelligence, or with their inherent enthusiasm and inquisitiveness. It seems to have much more to do with lack of opportunity, and the impact that has on students' perceptions of themselves and the future.

Ophelia Stringer had difficulty in school, but she's smart, and she knows how to use computers. I met her teaching a new student how to login. She's an active net user—she sends email; participates in KidsNet, an international FidoNet project for students to communicate with each other from around the world; and reads USENET regularly. One of the newsgroups she follows deals with African-American sociology.

Euldrago Johnson joined the Partnership Academy because for most of his high school career, hanging out talking to girls was more interesting than class. Now he's on the honor roll. He likes teaching other students how to do things, and he's got some ideas about living in the future. He wants to be an industrial engineer, and to have an understanding about many different professions—from biology to real estate. He wants "to make money off my knowledge, 'cause if I want to have children I want them to come up right. My parents always taught me you choose a career that's what you would want to do, not what somebody else wants you to do, or what makes the most money, 'cause the worst thing that can happen to someone is having a career they're not happy with."

PHILOSOPHY IN ACTION

Radke and his students face some tough challenges. As he describes it, his students don't need funding equity, they need more funding—so they can eat, for example, which would help their concentration. They also confront the threat of violence on a daily basis. Computers can seem pretty irrelevant if you're scared of getting killed because you want to leave your gang.

And there are eighteen different languages spoken at Richmond High. How do you learn word processing if you can barely speak English?

Motivating students to learn depends on developing projects that empower them in real-life situations. Fortunately, that's one of Radke's skills. One early class project aimed at teaching students word processing required students to write a letter to the School Board about its decision to make Richmond High a closed campus in response to recent shootings.

continued on page 264

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Computers In Education Case Study:

"Academies" At Oakland Technical High School

BY MICHAEL ROBIN

These days it seems as if the controls regulating technological change are locked in fast forward. Unfortunately, schools are rarely able to keep up with this pace.

With new PS/2-based local area networks, the Health and Pre-Engineering academies at Oakland Technical High School demonstrate the potential for computers in education. Each in its own way, these two networks highlight not only the importance of computer technology for education, but the vital role of human factors.

Years before the introduction of personal computers we heard about the great educational potential of computers. Most schools today have some computers (although much of this equipment is old and often only semi-functional). However, questions arise: What is being done with existing technology, what training is available for teachers, and who is providing support and maintenance for these systems? Only with the proper combination of equipment, trained and motivated instructors, and technical support can this technology be fully utilized in our schools.

OAKLAND TECHNICAL HIGH SCHOOL

During the 1990–91 school year, Oakland Technical High School received several grants for its Academy programs from IBM's California Education Partnership program. Both the Health and Pre-Engineering academies received a network of PS/2s, a Model 80 server, and software including Novell NetWare 286, IBM LinkWay hypertext application, Microsoft Works, and Express Publisher. The Pre-Engineering Academy has received additional support through the Autodesk Foundation Partnership program that included architectural and CAD software.

Although the hardware and software component in these grants is important, another often-overlooked factor was just as important to the success of the effort. The IBM Partnership program included funding for a support person for one year. That support person, Bruce Buckelew, a retired IBM employee and currently an independent consultant, has been working with Oakland Tech for over a year, providing technical support, training, some systems administration, and general technical advice. Since the original grant expired, Buckelew continues to work with Oakland Tech, being paid for some projects but mostly just volunteering his time and skills.

In addition, the Pre-Engineering Academy is fortunate to have Mauri Laitinen, retired Autodesk cofounder, working with the Autodesk Foundation to assist the school when problems arise, particularly with AutoCAD.

THE ACADEMY SYSTEM

The two academy programs at Oakland Tech—Health and Pre-Engineering—are part of the seven academy programs in the Oakland Unified School district. These programs create a "school within a school," which strives to motivate students deemed "at risk" by integrating disciplines as well as educational and vocational skills. With about 175–200 students each, the Health Academy focuses upon health-related fields while the Pre-Engineering Academy, with both academic and internship programs, is focused on engineering and architecture.

In the face of many obstacles, including significant city and state budget difficulties, both of these programs are viewed as still-evolving but successful programs. Each academy is fortunate to have a highly motivated and skilled director. The differences between the directors, the instructors they have attracted, and the disciplines themselves account for most of the differences in the development and use of these two networks. According to Buckelew, "The networks in the two academies are polar opposites. The Pre-Engineering program is focused on what they use the computers for. They use AutoCAD: they use it to teach descriptive geometry, they use it so that kids can get visual representation that they couldn't get with 2-D paper and pencil.

"The Health Academy, which is almost open-access, lets kids do whatever they want, even put their games on [the system]. It's real loose. And it is real interesting to watch kids here. One of the things that has been interesting is that the kids respect the computers. They have not been trashed at all in the open access. The kids can just come up to one, turn it on and use it. We've lost one mouse. I get the sense that the kids feel like it's theirs, and they are very respectful toward it."

THE BODY PARTS PROJECT

The Physiology class in Oakland Tech's Health Academy spent last semester developing the Body Parts project. Instructor David de Leeuw, along with Buckelew, designed this project to integrate a variety of educational, technological, and vocational skills using their new network of computers.

"The Body Parts project," says de Leeuw, "assigned students essentially identical projects looking at different parts of the body, and then put everything together" to form a whole. After students received their research reports back, with comments from other students and grades by de Leeuw, they needed to learn some basic word processing to enter the text into the computer.

According to de Leeuw, students then went into LinkWay, IBM's hypermedia application, to "import the text, manipulating a text box, and creating a little picture box. We had a little hand held scanner. I told them to go out and find a line drawing of their assigned part of the body. We taught a few students to use the scanner, and they showed other kids. Gradually we scanned in all the parts of the body.

"We spend about twenty-five class sessions on it over six months—something like twenty-five hours a student. The kids who did really good ones did ten to fifteen more hours, squeezing it in other places, at lunch time, after school. "

The students were only told in general terms how their part of the project should be done, and given basic instructions on how to use the technology. Students were given a great deal of freedom to determine how they wanted to present their material. For instance, some students had Buckelew teach them after hours how to animate their drawings or create more elaborate buttons.

De Leeuw's enjoyment and satisfaction as a teacher is clearly evident. He tells of one student "who did this hypertext-like project. She did a whole thing on the structure of bone, used all the technical terms she wanted, created a button over every single technical term. You click on the button, or the pink highlighted term, and you get a definition right there. Some of the definitions even refer to each other."

He adds, "Many of them figured out how to do 'magnified view' with their graphics. So

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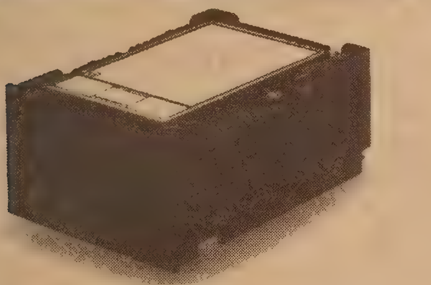

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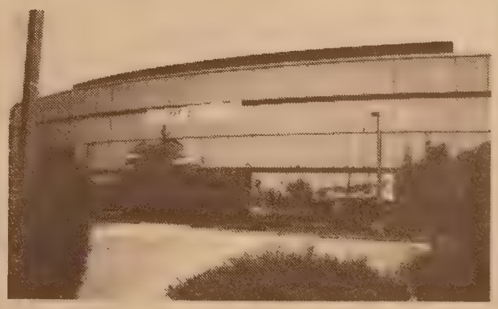

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Quantum™

SUPERFAST / 2 Year Warranty

SIZE(MB)	TYPE/FORMAT	SPEED	PRICE
52MB	IDE 64K Cache	11ms	$199
105MB	SCSI 64K Cache	11ms	$319
122MB	IDE 256K Cache	fast	$319
122MB	SCSI 256K Cache	fast	$369
240MB	IDE 256K Cache	fast	$549
240MB	SCSI 256K Cache	fast	$629
425MB	IDE/SCSI 3.5"	9ms	$899
1.2GB	***FORMATTED SCSI-2 SuperFast***	***9ms***	***$1699***
42MB	ELS42A	•IDE JUST IN•	$179
85MB	ELS85A	•IDE JUST IN•	$229
127MB	ELS127A	•IDE JUST IN•	$299
170MB	ELS170A	•IDE JUST IN•	$369
42MB	ELS42S	•SCSI JUST IN•	$185
85MB	ELS85S	•SCSI JUST IN•	$279
127MB	ELS127S	•SCSI JUST IN•	$329
170MB	ELS170S	•SCSI JUST IN•	$399
80MB	2.5"SCSI for MAC Notebook		$349
120Mb	2.5" IDE for Notebook		$489
120Mb	2.5" SCSI for MAC Notebook		$529

FUJITSU

Factory New / 5 Year Warranty

SIZE(MB)	TYPE/FORMAT	Size	SPEED	PRICE
330	IDE SUPER FAST	3.5"	12ms	$799
420	SCSI-2 M2623	3.5"	12ms	$939
420	IDE M2623T	3.5"	12ms	$889
520	***SCSI-2 2624FA***	**3.5"**	***12ms***	**$999**
520	IDE 2624T	3.5"	12ms	$959
1.2Gb	SCSI	FH	14ms	$1579
2.0Gb	SCSI-2	FH	11ms	$2495

Maxtor

Factory New / Full Warranty

SIZE(MB)	TYPE/MODEL	Size	SPEED	PRICE
80	IDE 2.5' for NOTEBOOK		15ms	$219
80	IDE 7080AT	3.5"x1"	17ms	$239
130	IDE 7120AT	3.5"x1"	15ms	$289
130	SCSI 7120SR	3.5"x1"	15ms	$319
213	***IDE 7213A***	***3.5"X1"***	***15ms***	***$389***
213	SCSI 7213SR	3.5"X1"	15ms	$489
340	IDE LXT340A	3.5"	15ms	$659
340	SCSI LXT340SY	3.5"	15ms	$699
535	IDE LXT535	3.5"	12ms	$949
535	SCSI LXT535S	3.5"	12ms	$999
540	***SCSI-2 MAGIC***	**3.5"**	***8ms***	***$1299***
670	SCSI or ESDI	FH	16ms	$1139
1.2Gb	***Panther SCSI***	***FH***	***13ms***	***$1499***
1.7Gb	***Panther SCSI***	***FH***	***13ms***	***$1749***

CONNER®

Factory New / 1 Year Warranty

SIZE(MB)	TYPE/MODEL	Size	SPEED	PRICE
42	IDE CP3000	3.5"X1"	FAST	$169
84	IDE CP30080	3.5 X"1	17ms	$219
120	IDE CP30104	3.5"X1"	19ms	$289
170	***IDE CP30174E***	***3.5"X1"***	***17ms***	***$319***
170	SCSI CP30170	3.5"X1"	17ms	$389
213	IDE CP30204F 256k Cache		12ms	$419
213	SCSI CP 30200 256K Cache		12ms	$539
544	IDE CP3544	3.5"	12ms	$Call
540	SCSI-2 CP3540	3.5"	12ms	$Call

Kalok

HIGH RELIABILITY / 1 YEAR FULL WARRANTY

105Mb	19ms	IDE 3.5"	$229
120Mb	19ms	IDE 3.5"	$259

HARD DRIVES

MICROPOLIS

Factory New / 5 Year Warranty

SIZE(MB)	TYPE/MODEL	SIZE	SPEED	PRICE
1.2GB	SCSI-2 FAST	3.5"	•10ms•	$1799
670	SCSI-2 MC1624	HH	14ms	$1199
1.2Gb	SCSI-2 MC1598	FH	14ms	$1549
1.5Gb	SCSI MC1528	FH	14ms	$1799
1.6Gb	SCSI-2 MC1908	FH	11ms	$2199
2.0Gb	SCSI-2 MC1548	FH	14ms	$2399
2.3GB	MC1924 SCSI-2	FH	11ms	$2999

Seagate

SIZE(MB)	TYPE/MODEL	Size	SPEED	PRICE
50	IDE ST351A	3.5"	19ms	$169
107	IDE/ST3120A	3.5"	17ms	$269
130	IDE/ST3144A	3.5"	17ms	$299
240	SCSI ST3283S	3.5x1	12ms	$589
425	IDE SUPERFAST	3.5"	12ms	$899
325	SCSI CLEARANCE	FH	16ms	$639
600	ST4702N	5.25"	16ms	$999
670	Wren Runner II	5.25"	11ms	$1399
1.2GB	***SCSI-2, 5Yr. Warr***	***3.5"***	***•10ms•***	***$1849***
1.2Gb	***Wren 7 SCSI***	***5.25"***	***14ms***	***$1499***
1.6Gb	Elite fast SCSI	5.25"	Fast	$2099
2.4Gb	Elite II fast SCSI	5.25"	Fast	$2999
3.4Gb	Eilite III Fastest SCSI-2			$4299

HEWLETT PACKARD

Factory New / 5 Year Warranty

SIZE(MB)	TYPE/MODEL	Size	SPEED	PRICE
1.2GB	C2247 SCSI2	3.5"	12ms	$1899
1.2GB	C97558 SCSI	FH	13ms	$1879
1.8GB	***C3009 SCSI-2***	***FH***	***11ms***	***$2699***
2.3GB	***C3010 SCSI-2***	***FH***	***11ms***	***$3099***

WESTERN DIGITAL

Factory New / 2 Year Warranty

84	IDE WDAC280	3.5"X1"	17ms	$219
122	IDE WDAC2120	3.5 x1"	17ms	$289
212	***IDE WDAC2200***	***3.5"x1"***	***15ms***	***$379***
340	***IDE NEW***	***1" HIGH***	***13ms***	***$649***

SAMSUNG

2 Yr. Full Replacement Policy

120Mb 3.5"x1" IDE 17ms $279

TEAC

Factory New / 1 Year Warranty

105Mb 19ms 3.5"x1" $229

TOSHIBA

STATE-OF-THE-ARTS, 5 Yr.Warranty

877Mb SCSI-2 3.5" 12ms $1149

1.2Gb Formatted SCSI-2 3.5" $1599

ALPS

1Yr. Warr / Made in Japan

105Mb 13ms 3.5"x1" $229

CASES

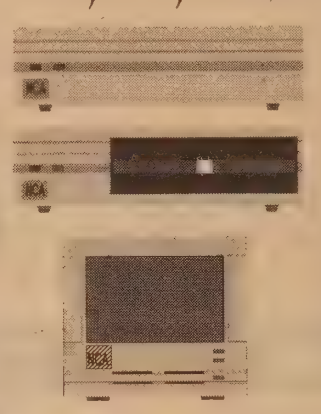
HARD DRIVE ENCLOSURES

Includes: SCSI Cable, Power Supply, all internal mounting hardware, and Cables.

Case for 3.5" & HH SCSI	$99
Case for 5.25" FH SCSI	$139
Case for 5.25" FH&HH SCSI	$169
Case for 2-5.25" FH SCSI with: 200 Watt Supply & 5 FANS	$295

External SCSI Drives

for IBM Compatibles, MAC, SUN, & NeXT



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EXT42	Quantum	2Yrs	19ms	$279
EXT52	Quantum	2Yrs	11ms	$299
EXT85	Quantum	2Yrs	17ms	$369
EXT105	Quantum	2Yrs.	11ms	$419
EXT125	Maxtor	1Yr	15ms	$419
EXT170	Conner	1Yr	17ms	$489
EXT213	Maxtor	1Yr	15ms	$589
EXT240	Quantum	2Yr	Fast	$729
EXT320	Seagate	1Yr	16ms	$839
EXT338	Seagate Runner	1Yr.	10ms	$1099
EXT340	Maxtor	1Yr.	15ms	$799
EXT425	Fujitsu	5Yrs.	12ms	$1039
EXT425	Quantum	2Yr.	9ms	$999
EXT520	Fujitsu	5Yrs.	9ms	$1099
EXT535	Maxtor	1Yr	12ms	$1099
EXT670	Micropolis	5Yr	13ms	$1299
EXT670	Maxtor	2Yrs	16ms	$1339
EXT670	Seagate Runner	1Yr	11ms	$1599
EXT877	Toshiba 3.5"	5Yr.	12ms	$1249
EXT1.2G	Micropolis 3.5"	5Yrs	10ms	$1649
EXT1.2G	Seagate 3.5"	5Yrs	10ms	$1999
EXT1.2G	Toshiba Formatted	5Yrs	12ms	$1699
EXT1.2G	Maxtor	2Yrs.	13ms	$1699
EXT1.2G	Fujitsu	5Yrs.	14ms	$1799
EXT1.2G	Seagate	1Yr.	15ms	$1799
EXT1.2G	Micropolis	5Yr	14ms	$1749
EXT1.5G	Micropolis	5Yrs	14ms	$1999
EXT1.6G	Seagate	1Yr	11ms	$2299
EXT1.7G	Maxtor	2Yrs.	13ms	$1949
EXT2.0G	Fujitsu	5Yrs.	11ms	$2795
EXT2.0G	Micropolis	5Yr	Fast	$2599
EXT2.3G	HP	5Yr	11ms	$3299
EXT2.4G	Micropolis	5Yr	11ms	$3299
EXT2.4G	Seagate Elite-2	5Yr	11ms	$3199
EXT2.4G	Fujitsu	5Yr	11ms	$CALL
EXT3.4G	Seagate Elite-3	5Yr	10ms	$4499

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SCSI CONTROLLERS

adaptec

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1522 16bit 7HD/2FD KIT....................	$159
1542BK 16bit Bus Master 7HD/2FD...	$259
1542B+ Kit with Corel SCSI *NEW*	$329
1640 MicroChannel for PS/2 7HD......	$329
1742 EISA KIT, 32bit 7HD/2FD..........	$459

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IN200016BIT 7HD/2FD easiest to use	$179
AL1000 SCSI to Parallel with Backup SW	$169

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TMC850 8Bit	$59
TMC1670 Kit 2HD/2FD.......................	$159
TMC 1680 16bit Card.........................	$169
TMC1680 16bit 7HD/4FD full Kit........	$249

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14F (10Mb /sec) FD/HD Kit............	$229
24F (33Mb /sec) EISA 64K fast........	$419

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<0.3ms Fast, uses regular 256x9, 1x9, 4x9 simms

CACHING 16BIT with 0Mb (up to 16M)	$259

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DTC EISA 32bit Caching with 512K........	$479
True 16bit 7HD/2FD SCSI CARD............	$129

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Standard IDE

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2FD/2HD with 2Serial/1Par./1Game	$25
SMART CONT. with Bios Easy install	$49

PROMISE TECHNOLOGY

<0.3ms Fast, uses regular 256x9, 1x9, 4x9 SIMMS

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Caching with I/O 4HD/3FD................	$189

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UltraStor

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Sun: Centronics to SCSI-II	$39.00
DB50 to Centronics	$39.00
DB50 to SCSI-II	$39.00

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40 Pin IDE with 3 Connectors	$3.99
50 Pin SCSI 3 Connectors	$5.99
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ARCHIVE

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SIZE(MB)	MODEL/TYPE	Internal	External
250	VIPER SCSI 6Mb/sec	$469	$569
525	VIPER SCSI 6Mb/sec	$689	$789
2.0Gb	***PYTHON DAT***	***$1149***	***$1249***
4.0Gb	PYTHON DAT	$1399	$1499

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SUN Compatible 8mm SCSI back up Systems.

SIZE	TYPE/MODEL	PRICE
2.2GB	EXB-8200 Int. $1749	Ext.$1949
5.0Gb	EXB-8500 Int. $2699	Ext.$2899

HEWLETT PACKARD DAT

4mm 2.0GB	*Int.$1149*	*Ext.$1249*
4mm 4-8Gb	*Int. $1599*	*Ext.$1699*

WangDAT™

SCSI FAST TAPE BACK-UPS

250Mb 5150 1/4" Tape	$469
525Mb 5525 1/4" TAPE Internal	$699
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4.0Gb 3200 DAT Internal	$1299

SUMMIT™

250Mb for IBM comp. $249

with Central Point Backup

IRWIN

An Archive® Company

Runs off the floppy port

120MB for IBM Comp Internal	$175
250Mb for IBM Comp Internal	$249

COLORADO™ MEMORY SYSTEMS INC.

TAPE BACKUP runs off the floppy port

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External Kit with Card and Cables	$109
Ext. tape port	$ 39
FC-10 Tape Controller, with cables	$ 89

INTRODUCING:

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Parallel Printer Port

External Tape Backup System

120Mb External	***$359***
250Mb External	***$419***

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SYTOS PLUS Software for IBM Comp	$99
NOVA BACK best Backup software.	$99
Back-up Software **for MAC.**	$79
Corel SCSI CD, Tape... etc. Software	$79

CD ROMs

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FAST: 325ms Avg. Access Time

Top End SCSI / NT Compatible

Model 3301B Internal	$399
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CDR-74M External SCSI 280ms MPC	$599
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CD ROM KIT with 5 CD Software Bundle	$449
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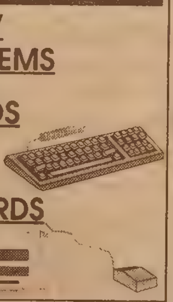

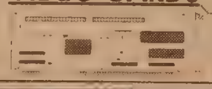

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SyQuest TECHNOLOGY

SCSI, Removable Cartridges

Complete Kits for IBM comp.

INTERNAL KITS

Include: Syquest Internal Drive Cartridge, Controller, Cable, Software.

44Mb	*8bit* **$399**	*16bit* **$499**
88Mb	*8bit* **$499**	*16bit* **$599**

EXTERNAL KITS

Include: Syquest External Drive Cartridge, Controller, Cable, Software.

44Mb	*8bit* **$489**	*16bit* **$589**
88Mb	*8bit* **$589**	*16bit* **$689**

SyQuest TECHNOLOGY Products:

SIZE(MB)	MODEL/TYPE	SPEED	PRICE
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	External Unit & Cartridge..		$429
88M	**SQ5110** Drive	20ms	$359
	External Unit & Cartridge		$529
	Cartridges: **44Mb $67 88Mb**		**$102**
	Controller & Software		$ 59

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Maxoptix™

1Gb Optical rewritable SCSI, 35ms

EXTERNAL Tahiti II	$2799
1Gb Cartridges Glass	$199

RICOH

Rewritable Optical SCSI Drives

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3600RPM, 35ms SUPERFAST SCSI OPTICAL

650MB Hyperspace Int. **RO-5031E**	**$2349**
650MB CARTRIDGE	$145

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DUAL FD 1.2/1.44M			**$149**

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3C87SX-33	$79
3C87-20, 25, 33	$79
3C87-40	$89

Cyrix.

83S87SX-16, 20, 25	$69
83S87SX-33	$79
83D87-16, 20, 25, 33	$79
83D87-40	$89

WEITEK

4167-33	$CALL

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386SX-25MHZ, VLSI, AMI bios	**$119**
386SX-33MHZ, VLSI, AMI bios	**$129**

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64k $209 128k $219 256k $229

386DX-40 AMD , AMI BIOS, cache:

64k $199 128k $209 256k $219

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with VLSI Chipset / Award Bios

486DX-33 (no CPU) 256K cache $159

SIS Chipset /AMI Bios, Weitek Socket

486DX-50 (no CPU) 256K cache $209

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1/4" TAPE 6525 525Mb	$33.95	$155.00
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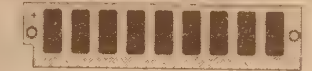
4mm DAT Cleaning Tape	$19.95	$85.00
2.0-4.0 GB ExaByte	$17.95	$79 95
128 OPTICAL RICOH	$49.00	$239.00
128 Optical Lens cleaner	$29.00	$139.00
650M Ricoh Cart. Optical	$145	$699.00
1.0 GB GLASS OPTICAL	$199.00	$979.00
44Mb SYQUEST CARTRIDGES	$67.00	$320.00
88Mb SYQUEST CARTRIDGES	$102.00	$490.00

SIMMS & CHIPS



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256X9	80ns	PC	$call
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1MBX9	70ns	PC 9Chip	$call
1MBX9	60ns	PC 3Chip	$call
1MBX9	60ns	PC 9Chip	$call
1MBX8	80ns	new MACs	$call
1MBX8	80ns	8 Chip	$call
1MBX8	70ns	2 Chip	$call
1MBX8	70ns	8 Chip	$call
2MBX8	80ns	2 Chip	$call
4MBX9	80ns	PC	$Call
4MBX9	70ns	PC	$call
4MBX9	60ns	PC	$call
16MBX9	70ns	PC	$Call
4MBX8	80ns	MAC	$Call
4MBX8	70ns	MAC	$call
4MBX8	60ns	MAC	$call
4MBX8	80ns	MAC FX	$call
16MBX8	70ns	MAC	$call

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2MB 604-80NS	$call
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256X1	100ns	$call
256X1	80ns	$call
256x4	70ns	$call
64x4	100ns	$call
64x4	80ns	$call
1x4	80ns	$call
1MBX1	100ns	$call
1MBX1	80ns	$call
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1X4	70ns	$19 95
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32X8-20	$9.50	8X8-20	$4.75
32X8-15	$18.00	8X8-15	$5.75
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64X4-20	$10.00	16X4-15	$9.25
64X4-15	$19.00	128X8-25	$42.50
64X1-20	$6.75	128X8-20	$Call
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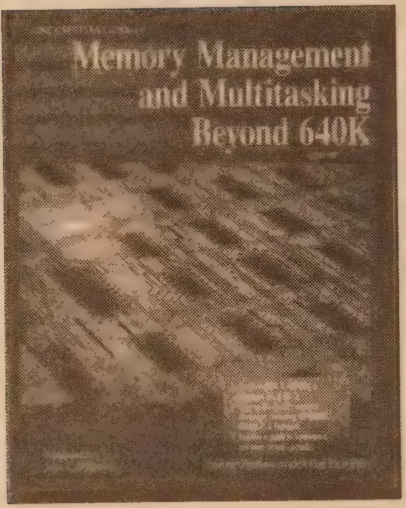
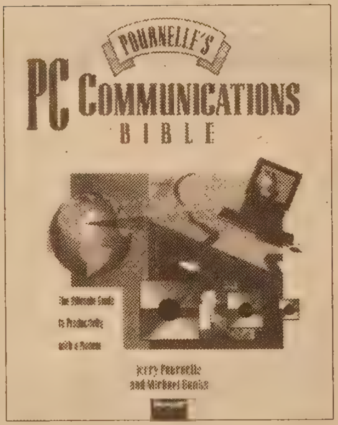
MEMORY MANAGEMENT AND MULTITASKING BEYOND 640K



This book offers a user's guide to extended and expanded memory options for IBM PC, 286, 386, and 486 compatible computers. Authors Lenny Bailes and John Mueller show how the 640K barrier can be broken, even by those users who can't afford expensive memory expansions. They answer many critical questions, describing how to maximize conventional RAM using DOS extenders, TSR programs, and various network and device drivers that increase standard memory capabilities. This book helps readers sort through the labyrinth of memory enhancement options: memory boards and chips, EEMS, LIM hardware and software, QEMM, Microsoft XMS, EMM386, SmartDrive, HIMEM.SYS, and many others. ($29.92 paper) Wincrest/McGraw-Hill, Blue Ridge Summit, PA 17294-0850. 1-800-233-1128.

POURNELLE'S PC COMMUNICATIONS BIBLE


POURNELLE'S
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Jerry Pournelle and Michael Banks

Pournelle's PC Communications Bible: The Ultimate Guide to Productivity with a Modem, by Jerry Pournelle and Michael Banks, presents an overview of how telecommunications works, what you'll need, and how to get started. There is detailed information about popular communications hardware, software, and services including 9600bps modems, "Pournelle's Picks," product shortcomings, and troubleshooting tips. Topics include sending telexes and faxes using your modem, automating online tasks to help speed up your work, choosing among email services, international computer communications, and a look at telecomputing in the future. ($27.95) Microsoft Press, One Microsoft Way, Redmond, WA 98052-6399. (206)882-8080.

THE MACINTOSH BIBLE, 4TH EDITION

As the power and diversity of the Macintosh computers and its users has grown, so has *The Macintosh Bible*. Fresh from the printer, the fourth edition presents 1200 pages of "basic and advanced tips, tricks and shortcuts logically

Continued on page 209

PRODUCT UPDATES

➤**Alias Research** released **Alias Sketch! 5.1**, the latest release of its freeform 3D illustration and design software for the Macintosh. The upgrade is available for $25. Alias Research, Inc., 110 Richmond St. E., Toronto, Canada M5C 1P1. 1-800-447-2542.

➤**Alida** introduced **GT Backup Release 4.0**, its network-based backup, restore, and tape managements system designed to run under Solaris 2.0 on SPARC systems and HP platforms. Alida, Inc., 27 McDermit Place, Bergenfield, NJ 07621. 1-800-883-GURU.

➤**Brøderbund** released **MacGlobe 1.3**, an electronic atlas that provides instant access to datalike maps and extensive data for 208 countries throughout the world. The upgrade is $25. Brøderbund Software, Inc., 500 Redwood Blvd., PO Box 6121, Novato, CA 94948-6121. (415)382-4400.

➤**DataViz** released **MacLinkPlus/PC Version 7 upgrade Kit.** DataViz, Inc., 55 Corporate Dr., Trumbull, CT 06611. (203)268-0030.

➤**Hayes Microcomputer Products** announced **Version 3.4 of Smartcom II for the Macintosh.** It provides same capabilities of v3.3, but features full language capabilities for French, German, and English, and adds support for Minitel terminal emulation for use with Videotex color graphics services. Users can upgrade to v3.4 for $35. Hayes Microcomputer Products, Inc., PO Box 105203, Atlanta, GA 30348-5203. (405)840-9200.

➤**Hewlett-Packard** is shipping **HP NewWave 4.1**, the easy-to-use desktop manager for Windows. Resigtered users of any version of HP New Wave may upgrade directly from HP for $49. Hewlett-Packard Co., PC Software Division, MS72UH, 974 E. Arques Ave., Sunnyvale, CA 94086. 1-800-554-1305.

➤**Microsoft** released **Works 3.0 for the Macintosh**. Current users of Microsoft Works v1.x and 2.0 can upgrade to v3.0 for $79. Microsoft Corp., One Microsoft Way, Redmond, WA 98052-6399. (206)882-8080.

➤**Pastel Development** released **DayMaker 2.0**, a major upgrade to its personal organization software for the Mac. Pastel Development Corp., 113 Spring St., New York, NY 10021. 1-800-727-6732.

➤**Peachtree Software** released **Peachtree Accounting for Macintosh 2.0** (formerly atOnce!). This upgrade adds two new modules, over twenty new reports, and many new features. Peachtree Software, Inc., 1-800-247-3224.

➤**PowerUp Software** announced **Express Publisher 3.0 for DOS**, a new version of its popular desktop publishing program. Current users can upgrade to v3.0 by sending the original title page from their users' manual and a check for $34.95 plus appropriate sales tax and $4.95 for shipping and handling. PowerUp Software Corp., 2929 Campus Dr., San Mateo, CA 94403. (415)345-5900.

➤**Software Publishing** released **Harvard Graphics 3.05 for DOS**. Registered users of v3.0 can upgrade for a $20 shipping and handling fee. Harvard Graphics 2.3 users can upgrade to v3.05 for $89. Software Publishing Corp., PO Box 54983 Kifer Rd., Santa Clara, CA 95056-0983.

➤**WordPerfect** announced a new version of its menu-driven relational database, **DataPerfect 2.3 for DOS**. Registered users of v2.2 can upgrade for $89. Customers with earlier versions can upgrade for $99. WordPerfect, Inc., 1555 N. Technology Way, Orem, UT 84057. 1-800-451-5151.

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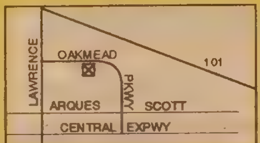
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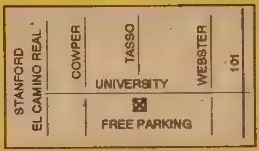
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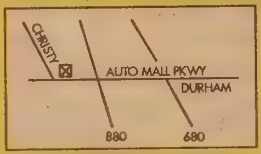
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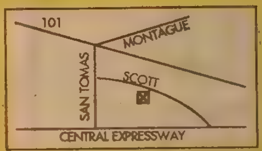
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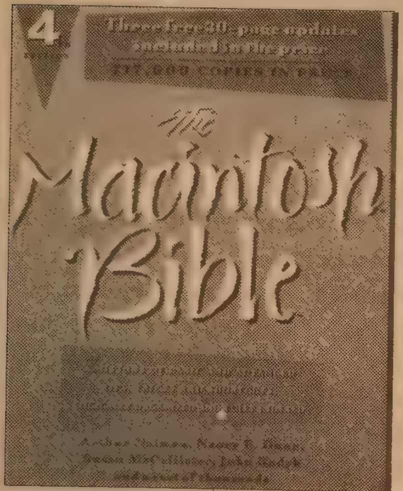
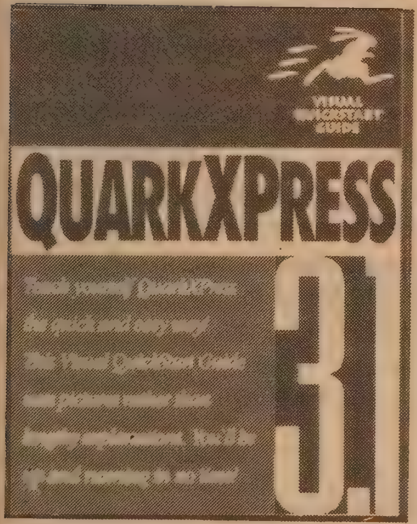
Continued from page 204



organized and fully indexed." Editorial Supervisor Arthur Naiman assembled a "cast of thousands" including Nancy E. Dunn, Susan McCallister, and John Kadyk to produce a computer book that not only contains a wealth of information, but is also extremely accessible. The book is available separately or bundled with almost 3MB of freeware and shareware. ($32, or $46 book/disk combo) Peachpit Press, Inc., 2414 Sixth St., Berkeley, CA 94710. (510)548-4393.

QUARKXPRESS 3.1: VISUAL QUICKSTART GUIDE, MAC EDITION



The purpose of this *Visual QuickStart Guide*, by Elaine Weinmann, is to help direct you through the main thoroughfares of QuarkXPress 3.1 with step-by-step instructions and lots of illustrations. There are also may special tips to help you avoid getting stuck. Designed for page-flipping, this guidebook is complete with thumb tabs. For quick reference, chapter headings and sub-headings are listed vertically on the outer edges of the pages. The book covers such topics as the basics (installation, toolbox, measurements palette, menus, dialog boxes), typography, using style sheets and master pages, rotating and layering pictures, and customizing QuarkXPress. ($14.95) Peachpit Press, Inc., 2414 Sixth St., Berkeley, CA 94710. (510)548-4393.

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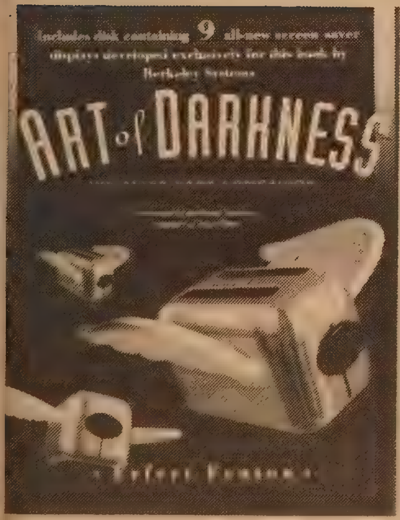
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ART of DARKNESS
Erfert Fenton

The *Art of Darkness* describes the more than fifty display modules that make up After Dark and More After Dark for the Macintosh. This book/disk package tells Macintosh users everything they didn't realize they needed to know about Flying Toasters and other screen savers. In addition, readers will learn how to modify and combine screen saver modules. The disk accompanying this book includes nine new modules for After Dark, developed exclusively for this book. The disk also includes ProtoToasters showing what screen savers looked like way back in the 1980s. ($19.95) Peachpit Press, Inc., 2414 Sixth St., Berkeley, CA 94710. (510)548-4393.

REVIEWS

GAME REVIEWS

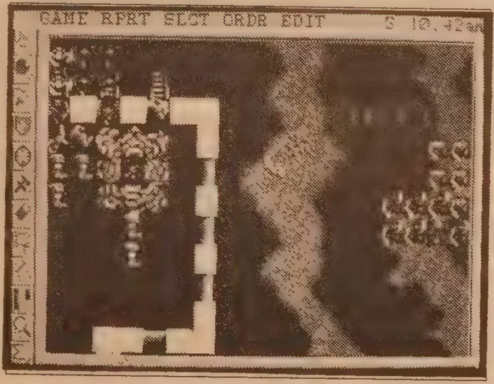
By Mike Markowitz

SIEGE

Programmed By: Patrick E. Hughes and Larry Froistad
Published By: Mindcraft
Distributed By: Electronic Arts
For: MS-DOS (640K, 12MHz, 80286 or faster CPU, VGA graphics, supports AdLib or Sound Blaster audio cards, mouse required), Amiga version also available
List Price: $59.95

For much of recorded history, the attack and defense of fortified places has been a basic part of the art of war. In the literature of dragons, sorcery, and fantasy, besieged castles are a standard theme. If you have ever felt a burning desire to pour boiling oil down on a squad of swinish ruffians as they swarm up a ladder, Siege, from Mindcraft will delight you.

The game lets you attack or defend a variety of intricately designed castles. Your troops may include peasants, knights, elves, wizards, trolls, goblins, and spiders. You can use battering rams, scaling ladders, and catapults (siegecraft mavens may be disappointed by the lack of any options for catapulting plague-infected carcasses or severed heads of prisoners over the walls to demoralize the defenders). There is also no provision for tunneling, which was a major part of siege warfare.



The action takes place in real-time, but you can vary the speed or pause the game when things get too intense. The user interface is excellent, with icon buttons and keyboard shortcuts for most commands. You can easily scroll around the battlefield and zoom in for close-ups. You designate areas to attack and defend by dragging a rectangle with the mouse. Swordsmen engage in hand-to-hand combat against enemy troops, while archers and catapults fire at designated target zones. You have to be careful not to shoot at your own men. The game's graphics appear to have been ported over from the Amiga version; the "calligraphic" typeface is too jaggy and hard to read.

Although Siege demands a minimun of 590K of free RAM, you need 2MB of RAM to enjoy all the sound effects. The game's 147 files occupy about 5.5MB of disk space after installation. A charmingly illustrated 60-page user manual provides a brief tutorial, thorough explanations of the game's many functions, and some background on the fantasy world in which the action unfolds.

Graphics and Animation: 7
Sound: 8
User Interface: 8
Overall Play Value: 7

Mindscape maintains an online bulletin board (310/320-5196) and user support forums on CompuServe and GEnie. (Mindscape, Inc., 2291 205th St., Ste. 201, Torrance, CA 90501. 310/320-5215)

SIMLIFE: THE GENETIC PLAYGROUND

Designed By: Ken Karakotsios
Published By: Maxis
For: Macintosh (2MB for monochrome, 2.5MB for color, System 7 compatible, but requires more memory), MS-DOS version to be released early in 1993
List Price: $69.95

A recent article in *Scientific American* addressed the difficulty of estimating the number of living species on Earth. It's pretty much impossible, because so many of them are microscopic, or live underground, in the ocean depths, or in remote Third-World areas which Western field biologists are staying away from. We do know that the Creator was fond of beetles; there are over sixty thousand variations of the basic model. If you're ready to try your hand at being Creator, SimLife may be just the package you've been looking for.

SimLife is a "software toy" for exploring the dynamics of evolution and ecology in a simplified artificial world. It represents a further elaboration of the ideas embodied in Maxis' SimEarth, released last year. SimEarth focused on the geophysical environment; with a limited set of living organisms that followed fixed evolutionary paths. In SimLife the species are modeled in much greater detail, with various "genetic algorithms" that shape their behavior and enable them to evolve in unpredictable ways.

You can create worlds ranging from "tiny" to "large," but the manual warns that a large world needs a fast machine with a lot of memory and storage. A saved game file can be huge: 2MB or more.

There is extensive online help and a well-

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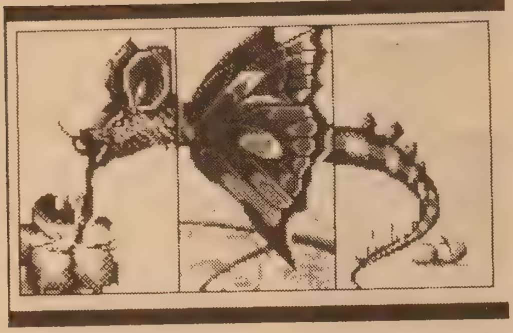

designed interactive tutorial that leads you though the program's many features. The user interface, with multiple floating palettes and overlapping windows, begs for a big screen; I found the 12" color monitor on a Mac LC much too constricting to fully enjoy SimLife. The color version runs in 16-color mode, but the graphic design is so good that this is not a limitation.

The program is installed from compressed files on an 800K disk. There are separate color and monochrome versions, plus a disk of files common to both versions. After installation, the color version occupies 1.6MB of disk space. The 208-page softcover manual is thoroughly illustrated with screen shots and written with a charming sense of humor. This program would be an excellent instructional tool for classes in biology or environmental studies in schools where the teaching of evolution is still permitted. (Maxis, 2 Theatre Sq., #230, Orinda, CA 94563-3346. 510/254-9700)

Graphics and Animation: 8
Sound: 6
User Interface: 8
Overall Value: 9

ZOOKEEPER

Programmed By: Larene Wade Spitler
Published By: Davidson
For: MS-DOS (640K RAM, 8MB hard disk space, 12MHz 286 or faster CPU, VGA graphics and mouse required, most audio cards supported)
List Price: $59.95

Designed for ages 6–11, Zookeeper can be enjoyed by anyone who appreciates animals. The program is a learning adventure, set in a zoo that is threatened by cartoon villains: Greedy Gert, Brain Drain, Meaniac, and Stir Crazy. They drop litter everywhere, scatter the wrong food and plants in the animals' habitats, and mess up the temperature and humidity settings. Your job is to set things right, assisted by Zoonie the Robot, a walking encyclopedia of zoology, and guided by Funk. E. Monkey, the coolest primate on a skateboard.

The Zoo consists of eight habitat zones: Desert, Rain Forest, Mountain, Forest and Woodlands, Grasslands, Polar, Oceans, and Rivers. With each area you can find a particular animal by following its footprints. Each habitat uses a digitized photograph as a background for smoothly animated computer graphics. Clicking on the binoculars at the side of the screen and the program displays a high-resolution close-up photograph of the animal. Click on Zoonie's globe and the screen becomes a world map showing the animal's geographic range.

Sometimes a path leads you to a memorial to an extinct animal. You receive clues about a particular animal that is currently being victimized by a villain. If you go to the right place, the bad guy is apprehended and placed in Zoo Detention. When you round up all the bad guys, a zoo animal is released back into the wilderness, and you advance one level. The levels range from "Cage Cleaner" to "Head Zookeeper," and the clues become harder as you advance.

There are over fifty animals in the program; including many endangered species; the selection is biased toward everyone's favorite large mammals. The program reflects the changing role of the Zoo, as a last refuge for the preservation of threatened species, rather than an exhibition of live captured trophies. Teachers might wish for a little more information density in the program, but Zookeeper manages to deliver some fairly complex ideas along with the fun. Young users should develop a good understanding of the way temperature, moisture, food, and vegetation fit together to make up an animal's habitat.

Graphics and Animation: 9
Sound: 8
User Interface: 9
Overall Value: 8

The program is installed from ten 3.5" disks (high-density 5.25" disks are also available.)

Zookeeper was developed with the advice of *Zoolife* magazine and Jack Hanna, director of the Columbus Zoo and TV personality (seen frequently with exotic creatures on the Dave Letterman show). (Davidson and Associates, Inc., 19840 Pioneer Ave., Torrance, CA 90503. 310/793-0600)

AMIGA SOFTWARE

AMI-BACK 2.0

Published By: Moonlighter Software Development, Inc.
List Price: $79.95
Reviewed By: Douglas J. Nakakihara

Ami-Back 2.0 is an impressive hard disk backup utility, which supports backups to floppy disks, hard drives, removable media, and tape devices. Since you can also back up to an AmigaDOS file, any standard Amiga storage device can be used. You can even append multiple backups to a single tape. This allows full utilization of a tape's capacity rather than requiring a different tape for each backup.

Ami-Back also supports multiple device backups, which is extremely convenient if you have more than one partition on your hard disk. However, make sure the devices are listed in the same order in the backup and restore configurations. A variety of methods are provided for selecting the files to be backed up, if a full backup of all files is not desired.

To minimize backup storage requirements, Ami-Back features "smart" compression, which decides on the fly if files are worth compressing before doing so. For example, files that have already been compressed don't usually compress further. This can save a lot of time if your hard drive contains a lot of pre-compressed files.

Ami-Back features Image backups for backing up non-AmigaDOS partitions like an AMAX or MS-DOS partition. A special 911-Recovery mode is also available to help in instances where you have problems reading a hard drive conventionally. Ami-Back is exceptionally fast and offers online help, AREXX support, and a host of other features. A scheduler program is included for unattended backups. (Moonlighter Software Development, Inc., 3208-C E. Colonial Dr., Suite 204, Orlando, FL 32803. 407/384-9484)

QUARTERBACK 5.0

Published By: Central Coast Software
List Price: $75
Reviewed By: Douglas J. Nakakihara

Central Coast Software's hard disk backup program, Quarterback 5.0, is packed with features, including one of the best looking interfaces around. Quarterback offers backup to floppy disks, hard drives, removable media, and tape devices. It can also backup to an AmigaDOS file. In addition to being able to select from a list of mounted devices for your source, you can assign additional directories.

Quarterback features adjustable compression. Though this option will reduce your backup storage requirements, it dramatically slows down the backup process. Higher compression settings require more available memory.

Quarterback features a multitude of ways to tag files for backup based upon several criteria. One method is pattern matching, where you can tag or untag files using standard AmigaDOS "wildcards" (e.g., #? and ?). These pattern lists can be saved and loaded, making Quarterback extremely versatile. The program also gives you control over its I/O buffers used for tape and removable (non-floppy) disk backups.

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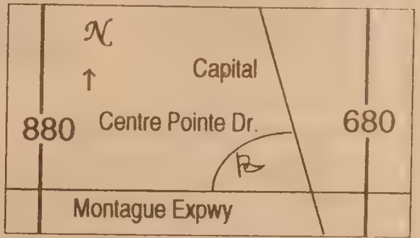

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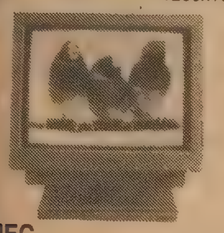

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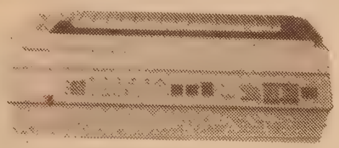

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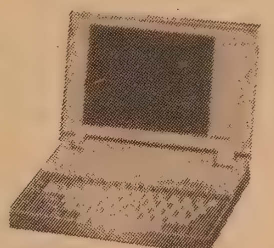

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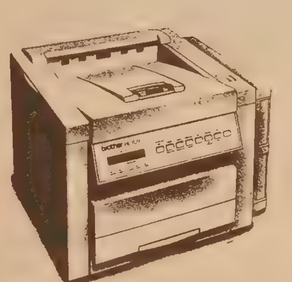

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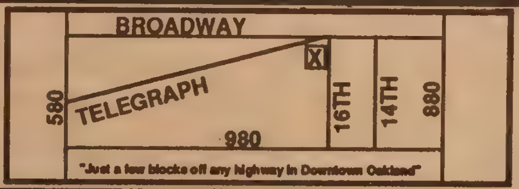

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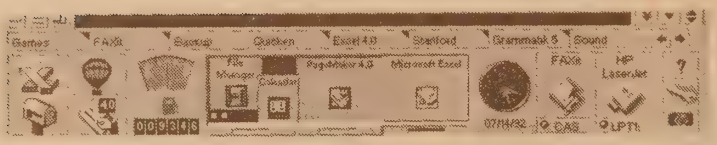
If you are using Workbench 2.0, Quarterback offers several additional features, like a 2.0 Workbench AppIcon. You can drag a Settings file onto the icon to set Quarterback configurations. You can also load a catalog file for restoring files or a disk/drawer icon for backing up in this manner. Quarterback also supports AREXX. Slow compression-backups and lack of multiple device backups are the only notable shortcomings of this otherwise-solid perennial favorite. (Central Coast Software, Inc., 206 Wild Basin Rd., Ste. 109, Austin, TX 78746. 512/328-6650)

PC SOFTWARE

DASHBOARD

Published By: Hewlett-Packard
List Price: $99
Reviewed By: Woody Liswood

Every Windows shell replacement program for the Program Manager I've tried seems to advertise that it is better than Windows, and makes Windows more Mac-like. All things considered, they only make things different, not better. Using a visual representation of how the "dash" might look if your computer were a car, Dashboard is not only interesting to look at but is more fun and easier to use than the Windows Program Manager.



Dashboard lets you use icons to launch your favorite or most often used programs. It places these buttons across the top of the dash, giving you easy access through a single mouse click.

The Extended Screen Manager presents each application currently open as an icon. You can have up to nine of these icons and a simple click brings you instantly to that program. The tool box lets you customize Dashboard and presents information about your system.

The feature I like best is a gas gauge showing the available memory and its usage. Dashboard also displays a gauge with an arrow and a warning light to tell you when you are about to run out of system resources.

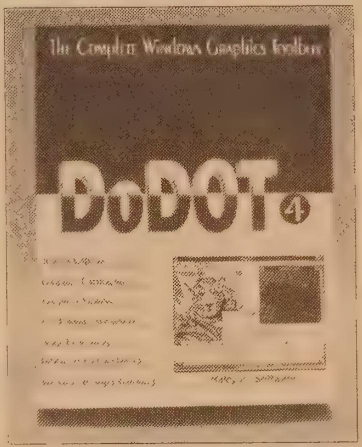
You can create a series of Dashboards, which you can load and use as you need. To ensure a quick reading of the dash, pressing the F12 key brings you Dashboard to the foreground for instant use. Nicely done, HP! (Hewlett-Packard Co., PC Software Division, 974 E. Arques Ave., Sunnyvale, CA 94086. 408/720-4040)

DODOT FOR WINDOWS, VERSION 4

Published By: Halcyon Software
List Price: $189
Reviewed By: Rich Grace

DoDot for Windows is a graphics management and processing program (termed a "graphics toolbox" by Halcyon Software), which offers many features, and places itself squarely in a market crowded by other programs such as Hijaak, Picture Eze, and nearly a dozen other packages. Does DoDot have what it takes to set itself apart? DoDot 4 is a solid competitor, though not a standout, in a tough field. It runs cleanly, and the programs are mature and functional.

DoDot is actually a set of five programs—DoSnap, a handy screen capture program; DoView, a module for viewing graphics files; DoThumbnail, a unique program for cataloging large picture libraries; DoConvert, a graphics conversion program, which handles up to fifty different graphics formats; and the main program, DoDot, which ties all the other programs together and provides some fairly sophisticated image processing capabilities, such as grayscaling color pictures, inverting colors and grayscales to produce photographic negative effects, flipping an entire picture, and scaling pictures from larger to smaller sizes. Operations are relatively slow, but always completed nicely. For speedier operations with large graphics, I'd recommend a minimum of a 486-33 with a fast hard disk and lots of RAM. You may want to turn off Windows SmartDrive as well.



One very nice feature of DoDot's conversion utility is its provision for Windows .RLE files, which are typical Windows bitmap files, shrunk to less than 50% of their conventional size, that can still be used for things like Windows wallpaper. The program also displays and converts Compuserve GIF files very efficiently (more so than programs such as Picture Eze). Things I'd like to see: the ability to Undo multiple levels, and pull-down menus to work with the program during tedious screen redraws (such as Picture Eze does). Also, the selection of conversion filters is OK, but not as great as Picture Eze or Hijaak. Still, DoDot 4 for Windows is a solid package which offers a number of handy utilities for serious graphic artists. (Halcyon Software, Inc., 1590 La Pradera Dr., Campbell, CA 95008. 408/378-9898)

INSIGHT

Designed By: Kahler Communications
Published By: Three-Sixty Pacific
For: MS-DOS (640K, EGA or VGA graphics)
List price: $99.95 (additional Profile disk is $69.95)
Reviewed By: Birrell Walsh

Theories of personality start from the universal observation that there are different kinds of people in the world. Every personality theory (or at least every marketable one) asserts that people can be reliably classified into a finite set of types, and when we know which type you belong to, we can make useful predictions about your behavior.

Insight is a software package based on the Kahler Process Model, a personality theory developed by Dr. Taibi Kahler over the past twenty years. Dr. Kahler helped to devise the psychiatric screening procedure used by NASA in astronaut selection. The model uses a classification of six basic personality types:

Reactors	(compassionate, sensitive)
Workaholics	(responsible, logical)
Persisters	(dedicated, observant)
Dreamers	(reflective, imaginative)
Rebels	(spontaneous, creative)
Promoters	(resourceful, adaptable)

Every type has its own strengths and weaknesses, and no type is "better" than another. Although one type is always the "base" or dominant theme, people can move through phases where another type comes into play. About 10% of the general population are Persisters, but over 70% of qualified astronauts fit this pattern. This reviewer turns out to be a Dreamer, in a Rebel phase.

The software offers a short, graphic tutorial and then presents a series of twenty-two questions that can be completed in about a half hour. Each question takes the form of a set of statements or alternatives you can rank-order, or leave blank if they do not apply to you. For example:

If my friends or coworkers were to see me as an animal it would be:

( ) an owl
( ) a fox
( ) a cat
( ) a beaver
( ) a "mother hen"
( ) a turtle

The program can then display or print out a detailed profile; a five-page analysis of the results. You are also invited to develop an Action Plan for greater personal and professional success.

Although the program is not copy protected, it uses an unusual "key disk"

Continued

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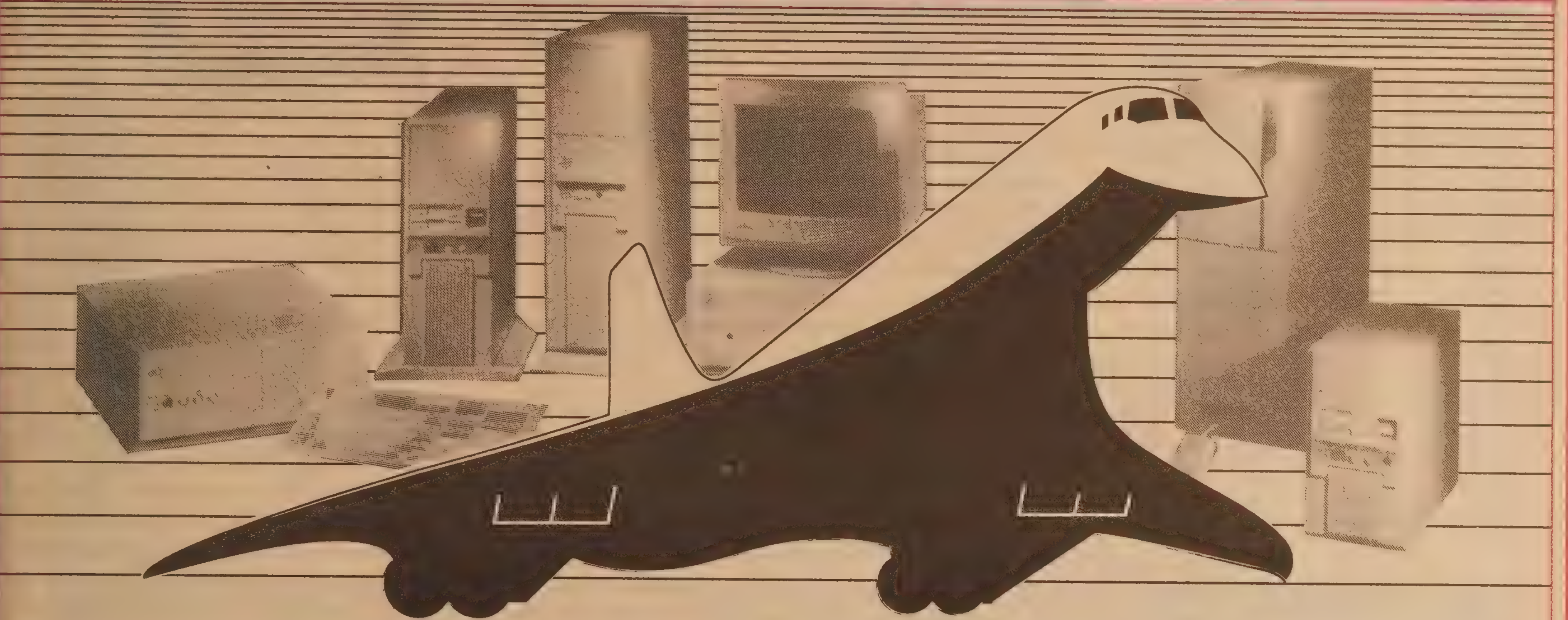

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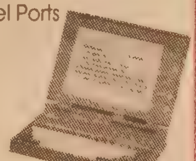

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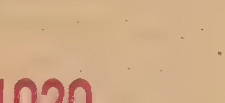

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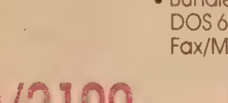

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scheme that limits the user to two completed Profiles. Additional key disks can be purchased for $69.95. This is cheap, compared to the cost of professional psychological testing, but unacceptably expensive for a mass-market software product.

The 95-page reference manual includes a glossary, several technical papers, and a bibliography on the background and application of the theory. A separate booklet contains installation and operating instructions for the program. The package also includes two audio tape cassettes of lectures by Dr. Kahler.

Three-Sixty Pacific is primarily a game publisher, but its founder, Tom Frisina, was deeply influenced by a Kahler seminar he attended in 1987, "and decided to make the information available to others in the easily accessible computer software format." Additional programs, based on the same theory, but focusing on family and other relationships, are under development. (Three-Sixty Pacific, 2105 S. Bascom, Ste. 165, Campbell, CA 95008. 408/879-9144)

LOOM

Published By: The Software Toolworks
List Price: $79.95
Reviewed By: Woody Liswood

Loom, a multimedia CD-ROM based game, is a great example of the marriage of sound, graphics, and CD-ROM technology. This new product definitely rekindled my interest in adventure games. This is the story and adventure of Bobbin as he tries to solve the puzzle connected with the tapestry of life.

Designed by LucasArts, the goal of the game is to solve the puzzle and experience the adventure, spending all your time trying not to get killed. Other games require that you continuously save yourself, never knowing when you are going to be killed and start over again. In Loom, for example, if you run into a water spout, it tosses you high in the sky, through two screens, bringing you back down with the verbal statement, "we'll have to give that a try again."

Loom is music based—the "weaving patterns" and "spells" are based on chord patterns played by a special staff. The staff can be displayed on-screen, to let you see the notes as you discover them. Or, you can hide the staff and rely on your memory for note patterns.

With music, 256-color VGA graphics, and the ability to control the hero, Bobbin, with my mouse, I can sit back and enjoy the game without having to spend more time worrying about the correct keyboard commands than I did about solving the puzzle or figuring out what nouns and verbs actually worked in any situation. This is a multimedia, graphic adventure game as it should be. (The Software Toolworks, Inc., 60 Leveroni Ct., Novato, CA 94949. 415/883-3000)

THE PRINT SHOP DELUXE

Programmed By: Sally Marlino, Kathy Vidovich, Tony Pate, Derk Wehler, David Nguyen, Mark Wheeler, and Kirk Augustin
Published By: Brøderbund
For: MS-DOS (1MB RAM, requires 80386SX or better CPU, VGA graphics, 24-pin or laser printer recommended, mouse and many color printers supported)
List Price: $79.95
Reviewed By: Mike Markowitz

With over four million copies sold, the Print Shop family is one of the great software success stories of the 1980s. This new MS-DOS version brings the old classic into the '90s, with over twenty new features, designed to take advantage of the power of today's MS-DOS computers and the increased resolution of today's printers.

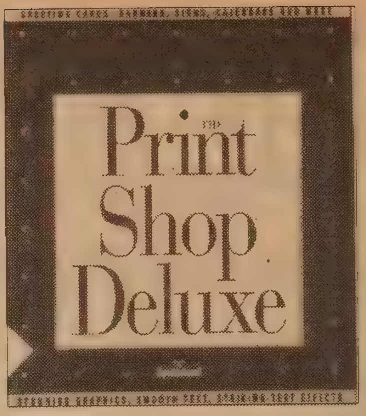
The great advantage of Print Shop has always been that the program makes it hard for you to create a truly ugly greeting card, flyer, calendar, or banner. It accomplishes this miracle by forcing you to follow a logical sequence of steps, limiting your design choices at each step. Print Shop Deluxe gives you considerably more freedom in the placement of graphics and text, but you don't have to use it; you can simply follow the ready-made templates and get an eye-pleasing result every time.

By switching from bit-maps to object-oriented graphics, Print Shop Deluxe gains the ability to smoothly enlarge or reduce your creations. By using outline fonts, rather than bit-mapped fonts, the program gains the ability to print smoothly formed letters in any size and to apply typographic special effects—like rotation, distortion, and graduated fills.

The three hundred graphics are in many different styles: cartoonish, sentimental, art nouveau, deco, etc. The thirty fonts are clones of traditional favorites: "New Zurica" looks like Helvetica, "Palatia" looks like Palatino, "Steamer" looks like Stencil, "Signature" looks like Brush Script, etc.

You really need a laser, inkjet, or (at least) 24-pin dot-matrix printer for PS Deluxe. A color-capable printer is even better. You can preview your design before printing, in color or black-and-white. The program supports hundreds of different printers.

Documentation includes an illustrated 96-page user manual and a reference booklet that illustrates all the graphics, borders, and fonts. After installation, PS Deluxe takes up almost 4.4MB of hard disk space, but you can reduce this by choosing to install fewer fonts and deleting printer drivers you don't need. Each font takes up about 36K.



PS Deluxe uses its own proprietary file format, but most graphics can be exported as EPS, CGM, PCX, or TIFF files for use in other programs. The Graphics Exporter is a separate, included application that has to be installed before you can use it. The program can import bit-map graphics from The New Print Shop, but they will not look as sharp as native PS Deluxe graphics.

Brøderbund has also released two add-on packages with additional fonts and graphics (listed at $44.95 each). The Print Shop Deluxe Business Graphics collection is aimed at office users, while the Print Shop Deluxe Sampler is intended for families, schools, churches, and clubs. Windows users may prefer to wait a while, since a Windows version of PS Deluxe (with support for TrueType fonts) is scheduled for release late in 1992. (Brøderbund, Inc., 500 Redwood Blvd., Novato, CA 94948-6121)

MIRACLE PIANO TEACHING SYSTEM

Published By: The Software Toolworks
List Price: $479.95 (Mac version, $499.95; Amiga version, $479.95)
Reviewed By: Woody Liswood

The Miracle Piano Teaching Method consists of an electronic keyboard, earphones, a cable to hook the keyboard to a serial port, a weird foot pedal, a (minimal) instruction book, and software. When everything is hooked up, the computer controls the keyboard. And the software can only be installed after the keyboard is attached to a serial port.

Although the teaching system truly works, like all teaching methods it depends on the motivation of the student. The structured practice sessions do not move to the next lesson until you have completed the current keying assignment, with the right tempo, and with no errors.

The software presents a menu of six graphics, each selects a different section of the teaching system. Administration lets you add or delete students. A Classroom gets you into the lesson system. A Practice Room lets you practice pitch, rhythm, reviews theory, or practices any of the contained music. An Arcade has a variety of games to help you

Continued

Introducing The VESA 486 Local Bus Systems!

☎(408)956-8373

VESA Local Bus System

- ☐ **Micronics VESA 486 Local Bus** motherboard with 64K cache
- ☐ **Two (2) VESA local bus slots**
- ☐ 4MB 70ns main memory installed
- ☐ 130MB IDE hard drive
- ☐ Both 1.2 & 1.44 TEAC floppy drives
- ☐ 1:1 2HD/2FD IDE controller
- ☐ 2 serial/1 parallel/1 game ports
- ☐ **Maxiswitch** 101-key keyboard
- ☐ 14" SVGA .28 DP color monitor
- ☐ Super VGA card with 1MB
- ☐ Desktop case with power supply

Free Mouse & Mouse Pad

486DX2-66	$2,330
486DX2-50	$2,010
486DX-33	$1,820

P.S. #1 Sellers

- ☐ ISA motherboard with 64K cache
- ☐ 4MB 70ns main memory installed
- ☐ 130MB IDE hard drive
- ☐ Both 1.2 & 1.44 TEAC floppy drives
- ☐ 1:1 2HD/2FD IDE controller
- ☐ 2 serial/1 parallel/1 game ports
- ☐ 101-key enhanced keyboard
- ☐ 14" SVGA .28 DP color monitor
- ☐ Super VGA card with 1MB
- ☐ Mini tower case with power supply

ET4000 Local Bus VGA	+95
S3 Local Bus VGA	+160

486DX2-66/50	$1,598/1,448
486DX-50/33	$1,588/1,348
486SX-25	$1,078
386DX-40/33	$1,025/1,010

P.S. Econo Systems

- ☐ ISA motherboard (64K cache for 386DX40/33 Systems)
- ☐ 2MB main memory installed
- ☐ 40MB IDE hard drive
- ☐ Both 1.2 & 1.44 TEAC floppy drives
- ☐ 1:1 2HD/2FD IDE controller
- ☐ 2 serial/1 parallel/1 game ports
- ☐ 101-key enhanced keyboard
- ☐ 14" SVGA .39 DP color monitor
- ☐ Super VGA card with 512KB
- ☐ Mini tower case with power supply

486SX-25	$860
386DX-40/33	$835/820
386DX-25	$797
386SX-33/25	$761/746

NetWare File Server

- ☐ **Novell Certified** 486DX-33 EISA file server
- ☐ 80486DX-33 CPU w/ 256KB cache
- ☐ 8MB 70ns main memory
- ☐ **BusLogic EISA SCSI host adapter**
- ☐ 200MB **Maxtor** SCSI hard drive
- ☐ Both 1.2 & 1.44 TEAC floppy drives
- ☐ 2 serial/1 parallel/1 game ports
- ☐ 101-key enhanced keyboard
- ☐ 14" mono monitor with card
- ☐ 16-bit Ethernet card (NE2000 compat)
- ☐ Full tower case w/ 250W PS

$2,125

Also available

EISA 486DX2-66	$2,425
EISA 486DX-50	$2,395
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On-site Service Available for Systems

A Complete Line of BASIC Systems to Fulfill Your Not So BASIC Needs

EISA 486DX2-66C	EISA 486DX-50C	EISA 486DX-33C	ISA 486DX2-66C	ISA 486DX-50C	ISA 486DX2-50C	ISA 486DX-33C	ISA 486SX-25	ISA 386DX-40C	ISA 386DX-25	ISA 386SX-33
$1,169	$1,130	$893	$918	$885	$745	$665	$377	$340	$308	$278

BASIC SYSTEM CONFIGURATION: Motherboard & CPU, 1MB main memory (**256K cache for EISA, 64K cache for ISA 486DX**), 2HD/2FD controller, **2 serial, 1 parallel and 1 game ports**, choice of 1.2MB **or** 1.44MB floppy drive, mini-tower case w/ 200W power supply and 101-key enhanced keyboard.

VIDEO MONITORS/CARDS

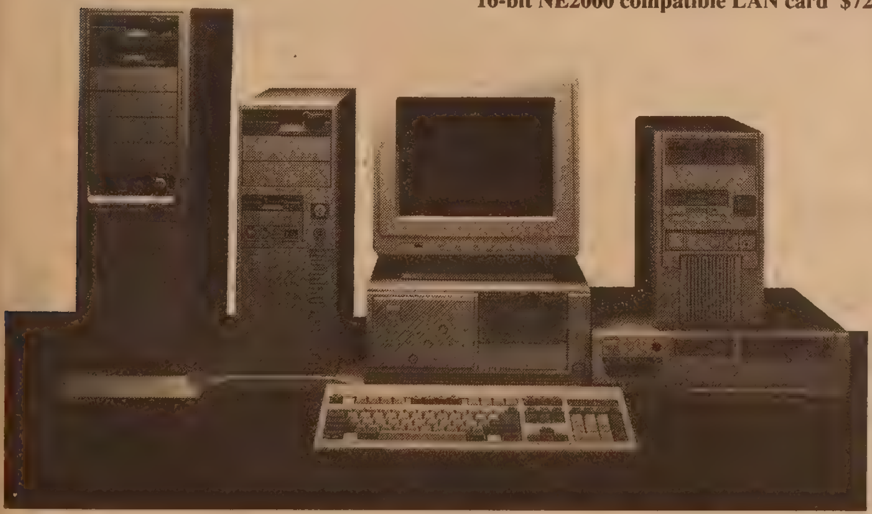
VGA card w/ 256K	$ 28
Super VGA card w/512K	$ 42
Super VGA card w/1MB	$ 62
Diamond Speedstar Hicolor 24X	$ 165
Diamond Stealth	$ 225
Orchid Prodesigner IIs Hicolor	$ 135
Orchid Fahrenheit 1280	$ 215
NEC 3FGX (15",1024x768, 0.28)	$ 665
NEC 4FG (15", 1024x768, 0.28)	$ 745
Sony 1304 (14", 1024x768, 0.25)	$ 580
Super VGA (1024x768, 0.39)	$ 220
Super VGA (1024x768, 0.28)	$ 260
Super VGA (0.28, NI, VESA)	$ 305
15" Super VGA (.28, NI, VESA)	$ 405
15" SVGA (.28, NI, VESA, LCD)	$ 490
Viewsonic 6E	$ 338
Viewsonic 7	$1,038
14" Mono Monitor w/MGP Card	$ 102

DRIVES/CONTROLLERS

40MB/28ms (IDE)	$ 168
80MB/18ms (IDE)	$ 220
130MB/18ms (IDE)	$ 280
200MB/18ms (IDE)	$ 410
Cache IDE 2FD/2HD w/512K	$ 120
Adaptec SCSI 1542BK	$ 249
BusLogic 542B Bus Master SCSI	$ 215
BusLogic 742A EISA SCSI	$ 310

MISCELLANEOUS

Keytronics 101-key Keyboard	$ 36
Northgate OMNIKEY 101/102	$ 70
Northgate OMNIKEY ULTRA	$ 100
Windows 3.1 + Mouse	$ 58
Internal Modem 2400 Baud	$ 34
Fax Modem w/Faxit for Windows	$ 65
Logitech Mouseman Serial/Bus	$62/64
Colorado 120/250MB Tape Drive	$188/248
Novell NetWare 2.2/3.11/Lite	$CALL
16-bit NE2000 compatible LAN card	**$72**



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- V.32bis (14,400 bps) and v.32 (9,600 bps)
- v.42 bis and MNP5 data compression
- CCITT group 3 send/receive fax
- WinFax Lite and DosFax Lite software

$228 (Internal)
$268 (External)

9600bps Internal Modem

- 57,600 bps throughput
- CCITT V.42bis/MNP 5 data compression
- V.42 and MNP 2, 3 and 4 error correction

$188

Multi-Media Upgrade

Give your system a multi-media boost! Order this multi-media option with any system purchase and save!

This super deal includes:

- **Sound Blaster Pro**
- **Creative Lab CD-ROM**
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PC MAGAZINE
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VIDEO SUBSYSTEMS

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1MB Display Buffer
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And
GUI Engine Graphics Accelerator Interface Card "The Highest Rating in Windows Benchmarks-10431329
$710

BONUS PACKAGE:
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- Windows 3.1
- Serial Mouse

FREE with any system purchase!
- Financing Programs Available

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ALL PRODUCTS SPECS AVAILABLE!!!

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- ◊ 486SX/25 Motherboard w/64K Made in U.S.A.
- ◊ 4 MB SIMM Memory Gold Plated
- ◊ INTEGRATED IDE 2FDD/2HDD Controller
- ◊ INTEGRATED I/O 2 Serial, 1 Parallel, 1 Game
- ◊ 120 MB IDE Hard Drive w/32K Disk Cache
- ◊ Includes Video SubSystem Option One
- ◊ 5.25" (1.2) and 3.5" (1.44) Teac Floppy Drives
- ◊ Deluxe Mini-Tower Case w/Digital Display
- ◊ 200 Watt UL/FCC Power Supply
- ◊ 101-Key Enhanced Keyboard
- ◊ Microsoft DOS 5.0
- ◊ One Year Parts and Labor Warranty

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SMART 486DX/33 PLUS
- ◊ 486DX/33 Motherboard w/64K Made in U.S.A
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- ◊ 120 MB IDE Hard Drive w/32K Disk Cache
- ◊ Includes Video SubSystem Option One
- ◊ 5.25" (1.2) and 3.5" (1.44) Teac Floppy Drives
- ◊ Deluxe Mini-Tower Case w/Digital Display
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- ◊ 101-Key Enhanced Keyboard'
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- ◊ One Year Parts and Labor Warranty

$1655

SMART 486DX2/50 PLUS
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- ◊ 120 MB IDE Hard Drive w/32K Disk Cache
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SMART 486DX/50 PRO
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$1706
Plus Video Subsystem Options

SMART 486DX2/66 PRO
- ◊ 486DX2/66 Motherboard w/256K Made in U.S.A.
- ◊ 8 MB SIMM Memory
- ◊ 16-Bit IDE 2FDD/2HDD Controller
- ◊ I/O-2 Serial/1 Parallel/1 Game
- ◊ 200 MB IDE Hard Drive
- ◊ 5.25" (1.2) and 3.5" (1.44) Floppy Drives
- ◊ Deluxe Mini-Tower Case w/Digital Display
- ◊ 200 Watt UL/CSA Power Supply
- ◊ 101-Key Enhanced Keyboard
- ◊ Microsoft DOS 5.0
- ◊ One Year Parts and Labor Warranty

$1975
Plus Video Subsystem Options

SMART EISA 486DX/50e PRO
- ◊ 486DX/50 EISA Board w/256K Made in U.S.A.
- ◊ 8 MB SIMM Memory
- ◊ SCSI II EISA 32-bit Disk Controller
- ◊ I/O-2 Serial/1 Parallel/1 Game
- ◊ 200 MB SCSI II Hard Drive
- ◊ 5.25" (1.2) and 3.5" (1.44) Floppy Drives
- ◊ Deluxe Mini-Tower Case w/Digital Display
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1) Prices and availability subject to change w/o notice.
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3) Return shipping must be insured, prepaid and bearing an RMA # on shipping label.

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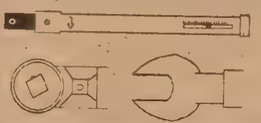
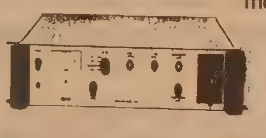
Torque Wrench -- Industrial Strength!



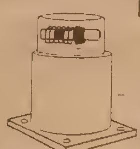
Just in -- industrial torque wrenches by Mountz. These brand new items are calibrated from 20 to 200 kgf.cm and feature "click" action torque control. Snap-fit heads include useful 3/8" ratchet, 11/16", 30 mm and 13mm open ends, and 17mm box end.
HSC# 13655 Set only $19.95

TV Modulator -- Industrial Strength!



Just what you needed to finish that home television station...this Channel 2 modulator by Telemet! These used units accept a composite video signal and audio and provide a VHF television carrier (channel 2) modulated by the input signal. 19" Rack mount chassis, schematic included. Full Manual available, $5
HSC#13657 $59.95

Test for Shock -- Industrial Strength!

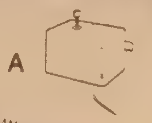


Here is an unusual item...a resettable G-force gauge! This high quality item is used to detect mechanical shocks in excess of 15 G's...perfect for determining if your shipment was dropped by the shipping company, or use to calibrate your rocket sled! Measures 2" tall on a 1 5/8" square base. Detailed data sheet enclosed. **HSC# 13656 $5.95**

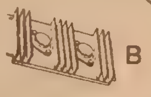
More from HSC's Project Locker...

We've scoured our shelves once again for rare & unusual parts that will get you thinking of the many uses to which they may be put. Many items you just won't find anywhere else, and our prices will encourage you to dream up new projects!

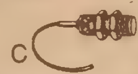
A. Inexpensive Motion Detector consists of a sealed metal box with a spring-mounted weight that closes a contact when jostled. Sensitivity adjustment & two mounting ears complete the package. 2.5" x 2" x 1"
HSC# 11456 $.95 ea.



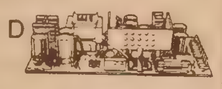
B. Heatsink with complementary Darlington Pair transistors measures 3" x 6.25" x 1", has 2N6031 (NPN) and 2N6058 (PNP) already mounted. 80V, 12A, hFE = 750 to 18000 @ 6A. **HSC#9677 $5.95**



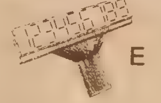
C. Microswitch 103SR11A-1Proximity Sensor -- Hall-effect detector operates on 5 VDC 4 mA, sources 3.5 VDC max 20mA in presence of greater than 25 Gauss magnetic field. .43" dia. x 1" (nuts not included) With spec. sheet. **HSC #5319 $.99**



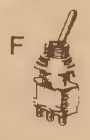
D. Tiny switching power supply, perfect for powering a single 3.5" hard disk drive. 2" x 6.25" x 1.25". Made by Skynet, used, tested good. Selectable 110/220VAC input, 5VDC @ 2A and 12VDC @ 1.5A output.
HSC #12758 $17.50



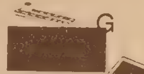
E. Nine-digit, eight decimal point numeric LCD with solderable connection strip. No funny sockets needed! .5" high digits, overall size of display .75" x 3". Pinout included. **HSC #13518 $1.95 ea. or 10/$15.00**



F. Miniature Toggle Switch -- SPDT 125VAC 6A or 250VAC 3A Standard type on-on switch, solder eyelet terminals. Any hobbyist should have at least a handful in his parts bin! Now you can afford it...
HSC# 13630 10/$6.95



G. Astec UM1285A 2/3 Video Modulator -- input baseband video, get channel 2 or 3 RF out. 1.75" x 3" x .75" **HSC# 5623 $2.95**

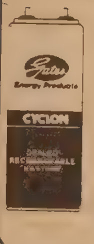


H. Touch Element from Koala Pad -- translate finger position to X-Y coordinates, or replace the element in your Koala pad that was damaged by your child scribbling on it with a ball-point pen!
HSC# 13005 $.95 or 10/$7.50

They're back! The Electronic "Leash" and Static "Watchdog"

HSC is once again able to offer you two alarms that protect you in unusual ways...The first is the "Sensor Alert" seen at left. This is a pair of small units that are "tuned" to each other and like to be near one another! When separated by more than 15 to 30 feet, the receiver emits a beeping tone. Think of the uses! Put the transmitter on your small toddler at the shopping center, keep the receiver on your belt (both units have clips). If Junior wanders off...BEEP! Or put one on your car keys, you will never leave the room without them! The possibilities are endless. The receiver is only 2" x 2.75" x .5", and the transmitter is even smaller, only 1.5" x 2.25". Each unit uses three button cells (included). **HSC #13024 only $6.95 for the set.** The other alarm is our Static Charge Alarm, seen at right, which will alert you to the presence of static electricity fields in its vicinity. This is important to know when working with CMOS or other sensitive integrated circuits. The unit will beep when one of three selectable levels of static charge is detected, allowing you to take preventive action. Only 4" tall, uses a 9VDC 300mA adaptor (included) or a 9V battery (not included). Prevent shocking developments! **HSC #12846 only $4.95**

Popular Rechargeables, Popular Prices!



These sealed rechargeable lead-acid cells and batteries are always in demand at HSC, so don't wait to order if you want some! The Gates cells were removed from multi-cell packs, so the tabs have been soldered, but they have plenty of life! We even learned that you can "rejuvenate" a flat cell by removing the outer metal sleeve and popping out the rubber plug at the top. Just add some distilled water like a car battery! Some of the 24 VDC multi-cell packs are also available. The Yuasa NP7-12 Batteries seen at right are new out of the crate. They use a gelled electrolyte, so don't try "rejuvenating" these!

Type	Size	Rating	Wt.	HSC#	Each	Pack/12
D Cell	2.65" x 1.33"	2V @ 2.5Ah	.4 lb	12327	$2.50	N/A
X Cell	3.16" x 1.73"	2V @ 5Ah	.8 lb	13513	$3.50	$40.00
J Cell	5.34" x 2.03"	2V @ 12Ah	1.8 lb	13512	$5.50	$60.00
NP7-12	2.5" x 4" x 6"	12V @ 7Ah	6 lb.	13123	$14.95	N/A

Solar Stuff for the Sunshine-Savant!

Check out these great items that work on free energy! Go solar & save!

1) **Solar Battery Charger** -- Small unit (2.5" x 4.5" x 1.5") has hinged lid with solar cell array for optimum sun angle. Can charge two AA or C Ni-Cd batteries (not included). LED indicates optimum charge rate. **HSC#80050 $12.95**

2) **Solar Rechargeable Flashlight** -- perfect for camping, emergencies...Never needs batteries! 2.5" x 1.25" x 3" fits in purse, backpack. **HSC#80048 $11.95**

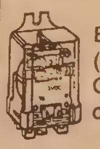
3) **4-Power Radio** -- Good-sounding AM/FM radio has solar panel for daytime use, or its internal dynamo can be cranked to charge internal energy source for up to a half-hour of listening time! Also runs off regular AA batteries or DC Adapter (neither included). Great for emergencies, power outages, camping, etc. 3" x 6" x 1.5" You may never buy batteries again! **HSC#80051 $29.95**

4) **Solar Education Kit** -- includes small solar cell (1.75" x 3" x .25"), booklet, small DC motor, fan blade, spinner disks, stickers, etc. Good for child's school or science fair project. **HSC #80017 $9.95**

5) **Solar Musical Keychain** -- plays melody in bright sunlight, also has LED flashlight so you can find that keyhole in the dark! **HSC # 80053 $4.95**

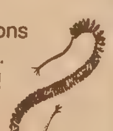
Attention: Robot Builders & Hobbyists!

A. Just in! 12VDC two-speed reversible motors, perfect for your own personal R2-D2's locomotion! These motors are 3" dia. x 4.5" long with a .5" long shaft. They will provide up to 30 oz.-in. of torque at 2700 RPM, unloaded speed is closer to 5000 RPM. Depending on load they draw anywhere from 5 to 9 amps. The .31" (5/16") dia. shaft is cut with gear teeth, but you could still put a pulley or gear with a set-screw on it. Generous 33" long leads are color-coded for easy hook-up. Connection diagram and torque curve chart provided. These motors are new, but slightly dusty. **HSC# 13617 $7.95 ea.**

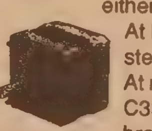


B. 12VDC SPDT Relay -- just the thing for controlling the above motor (in fact, they are both left-overs from a camper-jack system). C.P. Clare GP3R211ND1000 relay is rated at 10 amps, uses solderless quick-connect tabs, and has handy mounting ears. **HSC# 13618 $4.95 ea.**

C. Heavy duty Coil-cords -- Two types available. Makes connections to moving fixtures easy! Rugged SJO insulation, slightly dusty. These are not easy to find, and only limited quantities are available!
HSC# 13620 20AWG, 5 cond., 5' stretches to 24' $5.95
HSC# 13621 18AWG, 4 cond., 4' stretches to 25' $7.95



D. Stepper Motors -- Two types, both 12VDC, sorry, no docs on either one yet... we'd appreciate info if you have it!



At left, Howard Ind. Model 1-19-4200, 3.6° per step, 1.75" x 1.75" x 1.75" **HSC #13036 $7.50**
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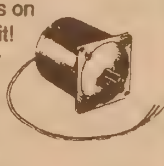

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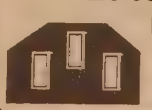

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learn your lessons. The Studio records and plays back your own efforts, and a Performance Hall lets you play along with the "Miracle Orchestra." The kids I tested the system with found the menu choices logical and straightforward.

Like any good teaching, it is practice, practice, practice. Each screen in the lessons demonstrates the "phrase" it is going to teach you. As this happens, a keyboard at the bottom of the screen shows the keys to be pressed in the proper sequence. Above that, several lines of notes are displayed. A pointer follows under each note to help you with the rhythm and timing. Sometimes a metronome clicks, at different speeds, offering additional help with timing and phrasing. Lastly, the system teaches you to read music, and introduces concepts lesson by lesson.

For a break, you can visit the arcade, where your last lesson can be shot at like ducks, or visited by flying saucers, among other things.

Great, fantastic, wonderful, fun, and other superlatives are the words I would use to describe this innovative and creative system to teach the basics of playing a piano keyboard. And after you have completed the lessons, you will have a good sounding electronic keyboard, with full MIDI connections. (The Software Toolworks, Inc., 60 Leveroni Court, Novato, CA 94949. 415/883-3000)

PROCOMM+ FOR WINDOWS

Published By: DataStorm Technologies
List Price: $179
Reviewed By: Lenny Bailes

DataStorm's Procomm+ for Windows retains most of the features that make the DOS version popular, and takes advantage of Windows' clipboard and DDE to provide enhanced features for the dedicated Windows user. Like most good Windows software, Procomm+ is installed in modules, allowing you to pick and choose the features you want to keep. (You may have to read the manual, however, to discover what you don't need.) Drop-down menus follow the standard Windows format, allowing you to quickly invoke alternate dialing directories, create or run scripts, capture text, etc. Some users may miss the familiar PgUp-PgDn sequence for uploading and downloading files, but in replacing it, DataStorm has added a queuing feature that allows users to mark files for transmission as they scroll by in a list. (You may also remap the keyboard to restore your favorite control-key combinations from PCPLUS for DOS.)

Other communications functions can be implemented by choosing an icon from the "Action Bar." (It would be nice to have the functions named, as the iconic depictions are not always intuitively obvious.) A host-mode is included along with the ability to convert scripts and directories from DOS versions of Procomm.

The advantages provided by Windows for Procomm are: 1) DDE links that allow financial data to be directly downloaded to a spreadsheet; 2) Captured text can be marked and transferred easily to a Windows word processor or database; 3) Windows' graphic interface combined with Procomm+'s ASPECT script language make it possible to run specialized communication, like viewing of CompuServe GIF images on-the-fly, when you receive them, or an online chess game.

The package includes an impressive demonstration of selecting a regional dialing directory by pointing at a graphic map of North America. (These are complicated script exercises for programmers familiar with Procomm's ASPECT script language, not for beginners.) You may view more or less text on the terminal screen by choosing a different font. The package includes thirty-four terminal emulations, the same as the DOS version. Metakeys is a more accessible feature that allows other Windows applications to be opened remotely while you remain in Procomm. (Support is included for modem-sharing over a network.)

The dialing directory is at the core of all versions of Procomm. In the pioneer days of PC telecommunication, users of Hayes SmartCom and Crosstalk had to flail their way through menus and cryptic two-letter keyboard commands just to dial a number. Bruce Barkelew, and his peers Andrew Pflugleman and John Friel, developed the numbered dialing directory screen which has since been emulated by most PC telecomm programmers. (Some Macintosh users still seem to prefer the one-number, one-profile system, but the queued dialing directory has even made some inroads over there.)

Procomm+ for Windows behaves itself and is fairly robust for a Windows application. (It doesn't quite have the snappiness of the DOS version.) Basic functions and system configuration are automated to remain painless and invisible. The integration of Macintosh features pioneered by programs like Microphone has been successful. Users may design special buttons to run scripts and create their own dialog boxes and procedures. But the casual user may be content merely to hit Alt-D, choose a number, and get a connection. (DataStorm Technologies, Inc., PO Box 1471, Columbia, MO 65205. 314/443-3282)

SPEEDCACHE PLUS 4.0

Published By: Future Systems Solutions
List Price: $129.95
Reviewed By: Matthew Leeds

Multimedia has hit the DOS market in a big way. Along with Windows it's the biggest boat anchor on your system's performance, particularly if you've got one of the early generation CD-ROM drives. Until now there was little you could do to improve your CD-ROM drive performance.

Drive caching software is old news. DOS includes a reasonably good hard drive caching program called SmartDrive, but it only improves your hard drive's performance, not your CD-ROM. Speedcache Plus can cache hard drives, CD-ROM drives, removable media drives like Bernoulli or SyQuest drives, and the new optical media drives and Floptical drives.

Speedcache Plus does not use INT 13H; this avoids incompatibility problems that other caching programs might have. Drive caches can be up to 23MB in size, there is support for both read-ahead and write-back caching, and it automatically uses high memory. In the testing I did I found a noticeable speed difference between SmartDrive and Speedcache Plus in addition to its ability to cache my CD-ROM drive.

The program comes with an excellent installer (I got it to work the first time!) and can be fine-tuned either via command line switches for DOS fanatics or through an excellent Windows utility. Speedcache Plus is compatible with DOS 3.0 and higher, including Compaq DOS, DR DOS 6.0, and also works with Norton Utilities, Stacker, and QEMM-386. (Future Systems Solutions, Inc., 0420 S. 500 E., Bluffton, IN 46714. 219/447-8204)

TRAILBLAZER

Published By: Twisted Pine Software
List Price: $77.77
Reviewed By: Rich Grace

Twisted Pine's Trailblazer is a program that dares to do some very different things with the Windows interface. Like XTree for Windows, Trailblazer is a file manager for the Windows environment, but the functional resemblance stops there. Although the user interface for the program is almost completely non-standard, it also happens to be one of the most visually attractive programs I've ever seen. Beautifully drawn color pictures accompany almost every function of the program, and Trailblazer is also liberally sprinkled with quotations from American historical and literary figures. Overall, the program's ambiance is a combination of Old Americana and leading edge high tech. The result is a program whose overall appearance is very warm and pleasing.

After a short adjustment to the methodology of this program, Trailblazer is relatively easy to use. The manual also incorporates the friendliness of this

Continued on page 225

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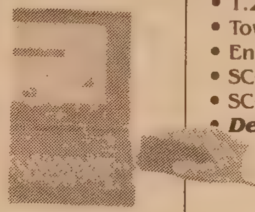

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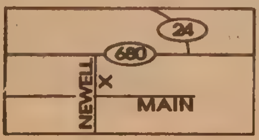

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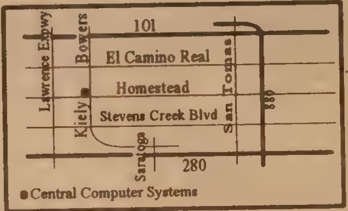

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8 MATH CO-PRO, CPU

CHIPS TECHNOLOGY / ULSI	
80387-SX16/SX20/SX25	65
80387-DX25/DX33	75
80387-DX40	95
CYRIX / INTEL	
83S87 - SX16/SX20 / SX25	69
83D87 -25/33	89
83D87 -40	109
INTEL OverDrive Processor	495
INTEL (CPU)	
Cooling Fan (heat sink)	25.50
386DX - 25 CPU/33 CPU	85
386DX - 40 AMD CPU	99
486DX - 33 CPU/50 CPU	440/620
DX2 - 50 / DX2 - 66	465/670

9 MEMORY CARDS

ACCULOGIC	
RAMpAT! up to 16MB(SIMM),16 bit(AT)	$99
SIMM-ply Ram 8/16 bit, 8MB max, XT,AT	145
SIMM-ply Ram 16 bit, 8MB max,PS/2-50,60	169
SIMM-ply Ram 32bit,8MB max,PS/2-70,80	179
EVEREX (all come 0K on board)	
Ram 3000 Deluxe (up to 3MB, EMS, for AT)	84
Ram 8000 (up to 8MB, EMS, for AT)	165
Ram 10000 (up to 10MB, EMS, for AT)	125
Ram II 4000 (PS/2-5,6,7,80)	175
INTEL	
Above Board w/ 512K	225

10 MEMORY CHIPS

DRAM	
1 MB x 1 - 80 ns	$3.99
256K - 80 ns / 64K - 100ns	1.09
256K x 4 - 80 ns	4.29
64K x 4 -80 ns	1.65
SIMM	
4 MB x 9 - 60 / 70 ns	155/145
1 MB x 9 - 60 / 70 / 80 ns	36/35/34
256K x 9 -70 ns	10
1 MB x 36 - 70 ns	150
4 MB x 36 -70 ns	570
Mac : 1 MB x 8 - 80 ns	33
4 MB x 8 - 70 / 80 ns	125/115
SIPP	
1 MB x 9 -70 ns (9 chips)	41
KINGSTON MEMORY for Apple, AST, AT&T, Compaq,IBM,Nec,Sun	call
LASER PRINTER MEMORY UPGRADE for HP and Panasonic	see #10 or # 20

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11 MODEMS & FAX

Konnexx 108 Connects modem to any telephone	$99
Comm-panion Pocket Fax Modem 96/24	129
SmartConnect 9624I Fax Modem	75
E-Tech	
Bullet Modem 9696 v.32,v.42bis Int./ext.	295/325
Ufomate Pocket Fax Modem (with Win/DOS s/w) P1496MX / P9696MX	319/295
EVEREX	
Evercom 9600 v.32,v.42,v.42bis,MNP5 Int	345
Evercom 2400 Baud External w/ MNP5	139
FRECOM	
Fax 96 w/ 1 Liner & Far Fetch Fax	135
Fax 96 & modem for DOS	119
Fax 96 w/ 1L&FFF & modem for DOS	169
HAYES	
Optima 96 v.32,v.42,v.42bis, MNP 5, Ext.	369
Optima 96 Ext. w/ Fax	395
Optima 144 Ext w/ Fax	495
Pocket edition 2400 w/ Smartcom EZ	129
Ultra 96 v.32,v.32,v.42,v.42bis,MNP5 Ext	579
Ultra 144 v.32,v.32,v.32bis,v.42,v.42bis, MNP5, Ext	669
V-series SmartModem 9600 v.42,v.42bis,MNP5,Ext.	499
INTEL	
14400EX v.32,v.32bis,v.42,v.42bis Ext	475
Faxability Plus/OCR for Windows upgrade	115
SatisFaxtion Modem/100 w. FAXability s/w internal 96/48 fax 2400 modem	105
SatisFaxtion Modem/200 w. FAXability s/w internal 96/24 v.42,v.42bis,MNP5	299
SatisFaxtion Modem/400 w. FAXability s/w internal 96/144 v.32,v.32bis, v.42,v.42bis,MNP5	399
SatisFaxtion Modem/400e external, 4K data buffer,WYPIWYF	475
MACRONIX	
MaxLite 96/PC pocket fax modem v.32,v.42, v.42bis, MNP5, w/ WinFax software	325
MaxLite 144/PC pocket fax modem v.32bis, v.42, v.42bis, MNP5, w/ WinFax software	385
PRACTICAL PERIPHERALS	
PM14400FX96 v.32bis, int	369
PM14400FX96SA v.32bis, ext	419
US ROBOTICS	
Courier 144 v.32,v.32bis,v.42,v.42bis,MNP5, Int	535
Courier 144 v.32,v.32bis,v.42,v.42bis,MNP5, Ext	555
Courier HST-DS 144 v.32,v.32bis,v.42,v.42bis,MNP5, Ext	775
Sportster 2400 modem w/ Sierra Game int/ext	99/109
Sportster 96 Modem MNP5 Int/Ext	259/289
Sportster 9696 FAX MNP5, Int/Ext	289/319
Sportster 14.4 v.32bis, v.42bis, Int/Ext	309/339
Sportster 96/14.4 FAX MNP5, Int/Ext	319/349
Shared Access Modem Sharing Kit	675
ZOLTRIX	
2400 baud modem w/ MNP5, Int	49
96/24 send & receive fax/modem w/ MNP5, Int	75
96/24 fax/modem MNP5 v.42, Int	105
Pocket send & receive fax/modem, Ext	139
ZOOM	
Send 96 Rec. 48 modem 2400 Int / Ext	85/105
FC9624V (int.)/FX9624V (ext.)	135/155
96/96 fax modem v.32, v.42bis, MNP5 Int / Ext	245/265
144/144 fax modem Int / Ext	299/329

12 MONITORS

9" VGA mono paper white	135
EMC	
EM 1412 14" Mono paper white	95
EM 1417 14" 1024x768 VGA paper white	115
EM 1428 14" 1024x768 .28	289
EM 1439 14" 1024x768 .39	249
GOLDSTAR	
1460 Plus 14" 1024x768	289
MATSUSHITA (VIEWSONIC)	
Viewsonic 1 14", 640x480, .39, Int	235
ViewSonic 4e 14" , 1024x768, .28, Int	315
ViewSonic 5+ 14", 1024x768, .25, NI	525
viewSonic 5e 14", 1024x768, .28, NI	425
ViewSonic 6e 14", 1024x768, .28, NI	355
ViewSonic 6FS 15", 1024x768, .28	629
ViewSonic 7 17", 1280x1024, .28, NI	1075
ViewSonic 8 20", 1280x1024, .31, NI	1595
MITSUBISHI (w/ base)	
HL6605ATK 16", 1280x1024, NI	925
HL6955SETK 20", 1280x1024, .31, NI	1745
BNC Cable	39
TFS 6705 17" 1024x1024, .26, NI	1055
NANAO	
9070U 16", 1024x768, .28 NI	775
9080i 16", 1280x1024, .28 NI	955
T560i 17", 1280x1024, .25, NI	1875
F550i 17", 1280x1024, .28, NI	1145
T660 20", 1280x1024, .31 NI	1825
T660i 20", 1280x1024, .31, NI, Trinitron	2595
NEC	
3FGX 15", 1024x768, .28	649
4FG 15" Flat, 1024x768, .28, NI	759
5FG 17" Flat,1280x1024, .28, NI	1375
5D 20" 1280x1024, .31, NI	1595
6FG 21" Flat, 1280x1024, .28	2495
NEC Monitor Lens (Anti-reflection, Anti-static) for 4FG / 5FG / 6FG	74/115/185
PANASONIC	
C1381I 14" Super VGA, 1024x768, .28, Int	325
C1395 14" 1024x768, .28, NI	435
C1991 20" 1024x768, .31, NI	1485
POWER II	
3E 14" Super VGA, 1024x768, .28, Int	285
4A 14"Multisync, 1024x768, .28, NI	319
SAMSUNG	
MA2565 12" mono amber	75
MZ4571 14" mono paperwhite	115
ML4571 14" VGA mono 640x480	125
CVM4967 14" 1024x768, .28	305
CSD5577 15" Flat, 1024x768, .28, NI	459/499
CSF7487 17", 1280x1024, .26, NI	1025
SEIKO	
CM1450 14", 1024x768, .25, NI	425
CM2050 20", 1024x768, .31, NI	1545
SIIG	
9" Mono paper white	115
SONY	
1304S 14", 1024x768, .25, NI	575
1604S 17", 1024x768, .25, NI	1055
1791 17", 1024x768, .25, NI, (1604S oem)	965
1936 20", 1280x1024, .30 NI	2195

13 MOTHERBOARDS

286-16	$95
386-33/386-40 (w/ 64K cache w/o CPU)	125/129
upgrade tp 256K cache	50
486-33 w/ 64K w/o CPU	155
AMI	
Mark V 386-33 w/ 64K/256K cache	480/595
Super Voyager 486-33 64K/256K	875/995
Super Voyager 486-50 64K/256K	1285/1395
Enterprise II 486-33/50 EISA w/ 128K	1295/1595
EZ-Flex 486DX-33/50 CPU card	955/1550
AMI Diag	95
GENOA	
Express 486-50 w/256K for Local Bus (w/o CPU) Color Bahn Multimedia VGA & Turbo	495
MICRONICS	
386SX-20 Phoenix BIOS (32MB max)	175
386SX-25	235
386-33 64K cache Gemini (32MB max)	355
486-33 256K cache ISA	725
486-33 256K cache EISA E2	1075
486-50 256K cache ISA	1175
486-50 256K cache EISA	1445
486-33 Local Bus w/256K cache	995
486-50 Local Bus w/256K cache	1195
486-66 Local Bus w/256K cache	1475
4MB Piggy Back (up to 8MB)	399
16MB Memory Card	150
upgrade to 256K cache for old 486-33	80
NICE	
486-33 256K cache (w/o CPU)	255
486-50 256K cache (w/o CPU)	305
486-50 256K cache EISA (w/o CPU)	555
upgrade to 256K cache	60
ORCHID	
Superboard 486/VLB (VESA Local Bus for VGA & controller) DX-33 / DX2-66 , 256K cache (w/o CPU)	375
DX-50 256K cache (w/o CPU)	395
QUICK-PATH	
486-50 w/64K cache, 15ns ISA (w/o CPU)	345
486-50 w/256K cache, 15ns EISA (w/o CPU)	545
upgrade to 256K cache for 486-50 ISA	80
UMC 286-12	79

14 MOUSE

AERO	
IMPC-60 3 button mouse	18
IMPC-40 trackball	29
APPOINT	
MousePen Pro for PC / Portable / Mac	59
Thumbelina for PC / Portable / Mac	59
GENIUS	
CLIX 3-button	19
GM-F302 mouse (3 button, PS/2 compat)	42
KENSINGTON	
Expert mouse serial trackball /Bus	99/115
LOGITECH	
Cordless Mouse	89
Dexxa Serial Mouse	27
First Mouse Serial	37
Fotoman Digital Camera for PC & PS/2	495
Mouseman Bus	64
Mouseman Serial PS/2 combo	65
Mouseman Serial PS/2 combo/ 5 pack	57/275
Mouseman Serial w/ WIN 3.1	115
Scanman 32	139
Scanman 32 with OCR software	185
Scanman 256	249
Scanman 256 with OCR software	299
Scanman color (16.8 million colors)	565
Trackman Portable	99
Trackman Combo	79
MICROSOFT	
Ball Point Mouse (portable)	119
Bus Mouse 400PPI	85
Bus Mouse (400PPI) w/ Windows 3.1	149
Serial Mouse 400PPI	65
Serial Mouse 400PPI w/ PS/2 port	85
Serial Mouse (400PPI) w/ Windows 3.1	149
MOUSE SYSTEMS	
Omni Mouse (2 button)	25
Optical Mouse Pad	22
PC Mouse III Serial (optical)	69
PC Trackball II	55
Serial Bus Card (9 IRQs)	30
The White Mouse w/ Power Panel	56
SIIG	
Trackball & Mouse 2 in 1 combination	55

15 NETWORK

Hayes LANstep	329
MainLINK II 3270 Emulation IBM & IRMA	399
MAILMAN 2.0	350
3COM	
3C503 8 bit coax / 3C503-TP ethernet	179/199
3C503-16 coax/ 3C503-16-TP Etherlink II	169/179
3C507 16 bit coax ethernet / 5 packs	279/1250
3C507-TP 16 bit TP ethernet / 5 packs	299/1450
3C509 coax / 5 pack Etherlink III	139/625
3C509 TP / 5 pack Etherlink III	145/650
3C523B Etherlink/MC for PS/2 / 5 packs	289/1210
3C523B-TP TP for PS/2 / 5 packs	319/1435
3C621 Link Builder 10 BT (12 port)	745
3C623 single port BNC Module	125
ARTISOFT (Lantastic)	
AE-2 Ethernet starter kit,10Mbps v4.1	459
AE-2 Ethernet Window starter kit	510
AE-2 Ethernet adapter	199
AE-2 MCA Ethernet adapter	275
AE-3 Ethernet starter kit,10Mbps v4.1/win	535/565
AE-3 Ethernet adapter	235
10BaseT starter kit v4.1	595
2Mbps starter kit v4.1	355
2Mbps adapter	145
AE-1/T 8bit 10Base-T adapter	135
AE-2/T 16bit 10Base-T adapter	210
64K RAM upgrade for AE-2, AE-3 adapter	45
AI software (individual node) v4.1	69
Articom (LAN modem sharing software)	269
Central Station Connectivity Processor	399
Dial up Connection	69
Ethernet Software Kit (NOS) v4.1	79
Lantastic Z (2 stations) v4.1	89
Lantastic for Netware (Network O/S)	139
Lantastic for Windows (software)	165
Lantastic for Macintosh Software kit	339
Lantastic for Macintosh Hardware & s/w kit	549
Lantastic Print Server Station Ware	69
Netware Print Server Station Ware	69
Network Eye (Remote Control Access)	129
Peer-Hub 10Base-T concentrator	270
Peer-Hub AUI interface kit	270
Remote Boot ROM for AE-2, AE-3 adapter	45
Sounding Board adapter kit	72
CASTELLE	
FaxPress (Network Fax Server) supports PCL,Postscript emultion, supports Novell, MS LAN, IBM LAN (different model)	
Novell 1 line ethernet coax	2595
Novell 2 lines Token Ring 16/4Mbps	3225
JetPress (Network Print Server) for HP II,IID,III,IIID, coax / TP	429
LANPress (Network Print Server) connects up to 4 printers, supports up to 32 queues on up to 8 file servers	
Ethernet Thick/Thin coax (1P 3S)	475
Ethernet Thick/Thin coax (2P 2S)	625
Ethernet 10BaseT (1P 3S)	475
Ethernet 10BaseT (2S 2P)	635
CC:MAIL	
cc:Mail DOS v4.0 / Windows platform	199/339
cc:Mail 10 user pack / 25 user pack	239/579
cc:Mail Gateway v3.21	879
cc:Mail FAX v1.2	1350
COMPULAN	
Ethernet	
8 bit E100 coax	95
8 bit ET500 TP ethernet	109
16 bit E200 coax	105
16 bit E210 coax & TP, BUS mastering,	159
16 bit E300 coax dual-port shared memory	129
16 bit ET600 TP ethernet	125
16 bit E650 coax & TP,Surface Mount	149
16 bit E200/2 coax for PS/2 MCA	145
16 bit E800/2 coax for PS/2 MCA	155
32 bit E900 coax, EISA Bus	249
32 bit E950 coax & TP , EISA Bus	259
Boot Prom	25
Concentrator 8 port +1BNC +1 cascading	319
Concentrator 12 port +1BNC +1 AUI	520
Pocket adapter for coax / TP ethernet	185
Arcnet	
16 bit for XT/AT Star Topology	69
16 bit for XT/AT Bus / TP	79/79
16 bit "4-in-1" Turbo Star & Bus w/NCR 90C98A ASIC	99
4-port Arcnet Passive Hub	19
8-port Coax Stackable Active Hub	159
Pocket adapter for Arcnet	135
Token ring	
T1000 16/4Mbps	349
T1000/2 16/4 Mbps for MCA	379
MAU 8-port Type 1 cable, DB9 shielded TP	329
MAU 8-port Type 3 cable, RJ45 unshielded TP	279
FARALLON	
PN380 PhoneNet card PC for LocalTalk	199
PT100 PhoneNet talk for PC	145
GATEWAY COMMUNICATION	
G/Ethernet 16 coax / 16 TP	129/149
G/Ethernet 32 bits	480
INTEL	
EtherExpress 16 coax / 16 TP	135/145
EtherExpress 16 MCA / 16 MCA TP	179/189
EtherExpress 32 EISA	553
EtherExpress ISA Hub Adapter	585
EtherExpress EISA Hub Adapter	685
LAN Protect 1.5 (virus protection)	685
LAN Sight 3.0 Netware Ultility/ Monitor	299
LANSpool software 386 NLM v3.5	425
NetPort II Thin/Thick Ethernet	519
NetPort II 10BaseT	529
NetPort II Token Ring	669
NetSatisfaxtion	635
TokenExpress 16/4 for ISA / EISA	535/685
TokenExpress 16/4 for MCA	535
NOVELL	
8 bit NE1000 coax ethernet	109
16 bit NE2000 coax ethernet	145
16 bit NE2000TP TP ethernet	155
32 bit NE3200 coax	699
NE10T-Hub 4 Port Concentrator	225
Netware Lite + DR DOS 6.0	69
Netware 2.2	
5 users / 10 users	489/1089
50 users / 100 users	1925/2955
Netware 3.11	
5 users / 10 users	619/1369
20 users / 50 users	1925/2799
100 users / 250 users	3859/6885
SMC (WESTERN DIGITAL)	
8 bit coax Ethercard Plus Elite	115
16 bit coax /16 bit TP Ethernet Plus Elite	145
Ethercard Elite 16 combo (coax/10BaseT)	175
Ethercard Plus/A for PS/2	219
Netware Boot ROM	34
Concentrator 8 Port (10 Base T Ethernet)	339
XIRCOM	
PE2-10B2 Pocket Adapter Ethernet coax	325
PE2-10BT Pocket Adapter Ethernet 10BaseT	345
PT2-16B3 Pocket Adapter Token Ring 16/4Mbps	615
CABLES & ACCESSORIES	
Twisted pair cable, TP 4-pair, PVC, 1000'	89
500' / 200'	55/35
10 BASE-T Twisted pair cable, 1000'	165
RG58 cable, 1000'	109
Belden 8259, RG58, 1000'	165
Transceiver AUI ---> TP (coax to RJ45)	69
Transceiver AUI ---> BNC (thick to thin coax)	69

16 POWER SUPPLIES

AMERICAN POWER CONVERSION (UPS)	
APC-400 Smart-UPS (286, 386 WS)	309
APC-600 Smart-UPS (386, 486 FS)	399
APC-900 Smart-UPS (386, 486, FS and WS)	639
APC-1250 Smart-UPS (multiple FS and WS)	799
APC-450 Back-UPS 286, ps/2, 386	235
APC-600 Back-UPS 286, 386 FS	285
APC-800 Back-UPS 800RT, 2-4ms, 15 mins	565
APC-750 On-Line UPS (286, 386, 486 FS)	1365
APC-1500 On-Line UPS (multiple servers)	2499
APC PowerChute for Novell / for UNIX	79
APC UPS Monitoring Board for NetWare	75
Power Doctor (for DOS) I/F kit for Smart-UPS	79
PC POWER COOLING	
Standard 220 desktop / full tower	95
Silencer 270 slim (for baby & mid tower)	169
AT desktop / full tower	179
Turbo-Cool 300 slim	165
desktop / full tower	185
Turbo-Cool 450 desktop / full tower	345
InnerSource 2210 UPS int, 95-132 VAC, 220W DC, 100W AC, equivalent to 550 VA external UPS	355
Novell Netware Interface for InnerSource 2210 UPS	55
TRIPP LITE	
BC 500 (stanby UPS)	209
BC 500 Lan (stanby UPS)	215
Omni 600 Lan (UPS + Line Regulation)	385
OTHERS	
200W (XT) (UL)	48
200W / 230W for Baby AT & Mid Tower	45/55
230W for AT	48
230W / 300W for FullTower	59/89
550W / 1200W (UPS)	279/999

17 PRINTERS

CANON	
BJ-10ex (Bubble jet)360 dpi,37K buf	289
Auto Sheet Feeder	79
Other Accesories same as BJ-20	
BJ-20 w/ Auto Sheet Feeder	385
Bag / Battery	39/45
Print Head Cartridge	22
CITIZEN	
GSX 200 (9 pin) / GSX 130 (24 pin)	165/205
GSX 140 Plus (24 pin)	269
Color Option for above printers	45
Auto Sheet Feeder for GSX 140	109
GSX 145 (24 pin, 132 column)	355
Color option for GSX 145	65
GSX 230 Scalable Fonts & quiet	249
GSX 240 Scalable Fonts & quiet	319
PN48 notebook printer,1ppm,2lb,battery,case.	325

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FUJITSU

DL1100 mono	255

HEWLETT PACKARD (LaserJet w/ toner)

Desk Jet 500 / 500C	395/519
Jet Ram Memory 256K for 500 & 500C	69
Desk Jet 550C	719
Laser Jet IIP+	775
Laser Jet III / Laser Jet IV	1420/1495
Laser Jet IIIP / IIID / IIISI	995/2295/3495
Accessories:	
Envelope Tray(15 envelopes) for III	69
Envelope Tray for IIP,IIIP	79
Envelope Feeder for IIID	295
HP Postscript Cart. for IIP, IIP+, III, IIID.	395
Legal Tray for HP II, III	69
Lower Cassette (w/ letter tray) IIP,IIIP	149
Toner for HP II, III	79
Toner for HP IIP, IIP+, IIIP	66
Jet Ram Memory for HP II 2MB / 4MB	135/205
Jet Ram Memory for HP IIP, IIP+,III,IIIP,IIID 1MB / 2MB	75/115
3MB / 4MB	155/195

LASER MASTER

Win Printer 800	1295
WinJet 800 800dpi, Postscript adapter for HP II,IID,III,IIID	699

MICROTEK

Scan Maker 600Z	1295
TrueLaser MTP-306 6ppm,2MB,35 fonts	1299

PACIFIC DATA PRODUCTS

ProTracer inkjet printer/plotter, A- to C-size output, 360dpi, I960RISC processor, 512K, 45dBA	1125
5 MB memory upgrade	439
8 MB memory upgrade	669
postscript emulation card	375
HP-GL Emulation Card	325
sheet feeder I / II	115/105
ink cartridges	19.50

PANASONIC

1180i / 1123	158/199
1124i / 1624	285/349
Auto sheet feeder for 1124 only KX-P36.	120
2123 24 pin, 43.5dBA, color capability	239
2124i 24 pin, 43.5dBA, color capability	319
2180 9 pin, 45dBA, color capability	159
2624 (24 pin, quiet printer 46.5 dBA)	375
Color upgrade kit KX-PCK11	49
Single bin cut sheet feeder KX-PT10	95
32K Buffer dot matrix printers KX-P43	65
Serial interface card PS-13	75
4410 Laser, 512K 5ppm	625
1MB mother Ram board KX-P444	115
1MB daughter Ram board KX-P445	99
LaserBoard 1MB (3rd party)	105
Corona KX-PCR3	45
Developer KX-PDP4	105
Drum KX-PDM4	89
Extra Cassette KX-PKC2	45
Fuser Unit KX-PFS5	105
Optional Second Cassette KX-P495	135
Toner KX-P453	35
Fonts Card KX-P47x (for Laser Printers)	95
4430 Laser, 1 MB, 5ppm	885
Accessories same as 4410	
4420 Accessories	
RamBoard 1MB / 2MB / 4MB	99/139/219
Developer KX-PDP2	95
Drum KX-PDM2	99
Envelope Tray KX-P431	59
Legal Tray KX-P425	45
Ozone Filter KX-PFT2	26
Toner KX-P451	39
4450 Accessories	
RamBoard 1MB	139
others same as 4450i	
4450i Laser, 11ppm	1095
RamBoard 1MB / 2MB / 4MB	99/139/219
Developer KX-PDP1	95
Drum KX-PDM1	145
Envelope Tray KX-P430	59
Legal Tray KX-P420	45
Ozone Filter KX-PFT1	29
Toner KX-P450	35
4455 (Postscript) 11ppm	1715
RamBoard 2 MB	159
others same as 4450i	

QMS (Adobe Postscript)

QMS-PS 410 4ppm, 2MB, 45 Fonts	1375
1MB / 2MB / 4MB Memory	125/165/245
Envelope / Legal / Letter Tray	69/69/69
Lower Cassette with Letter Tray	160
Toner	95

SEIKO

Smart Label Printer Plus (IBM/APPLE)	159
Box of Label (2 rolls per box)	10.95

TEXAS INSTRUMENTS

MicroLaser Plus PS17 / PS35 9ppm.	1155/1295
Apple Talk Kit / Ram Board 1MB	99/69

LASER PRINTER ACC.

IQ ENGINEERING

Super Type Master Library	99
Super Cart. 2 for HP II, IID, IIP, IIP+, III, IIID.	249
Super Cartridge 2 & 2LC	269
Super Cart. 3 Pro+ for HP III,IIID,IIIP,IIISI	249
Super Cart. 3 Creative Collection for III family.	249
Desk Jet 500 Professional	99
Desk Jet Plus Professional	99

COMPUTER PERIPHERAL

Jet Page (for HP II)	295

GENESIS

JetTray 250E, holds 250 #10 envelopes	469

PACIFIC DATA

25 in One! III (for Deskjet 500)	99
25 in One! III (for HP II, IID, IIP, IIP+, III, Microtek)	245
Complete Font Library for HP III, IIID, IIIP	255
Font Bank (NEW) (for all HP Laserjet) stores soft fonts, 0.75MB / 1.5MB	205/269
Headlines Cartridge for HP II, IID, IIP	185
MacPage Driver and Connection Kit for Mac & HP II, IID, IIP, IIP+, III, IIIP	95
Paicfic Connect XI (connect up to 10 PC and/or Mac to a printer)	
For HP II, IID, IIP, IIP+, III, IIID, IIIP :	
5 port 256K / 1MB	319/389
10 port 256K / 1MB	449/519
For HP IV, IIISI, Paint Jet XL300 :	
7 port 1MB / 4MB	449/649
10 port 1MB / 4MB	519/719
Pacific Page & 2MB (Postscript for HP II)	389
Pacific Page II / XL(postcript for HP II)	719
Pacific Page P.E. (for HP IID,IIP,IIP+,III,IIID, IIIP)	279
Pacific Page P.E. & 2MB	405
Pacific Talk	179
Pacific Page PE XL (for HP IIP, IIP+, III, IIID, IIIP) Postscript emulation cartridge comes with 2MB & accelerator board 8 times faster than other cartridges	719
Pacific Print for network & HP II, IID, IIP, IIP+, III, IIID, IIIP	99
Plotter in a Cartridge (for HP II)	225
Plotter in a Cartridge P.E. for HP IID, IIP, IIP+, III, IIID, IIIP	225
1-2-4 Plus (for HP II, IID) 1MB/2MB/4MB	115/155/235
Pacific 4 Memory (for HP IIP, IIP+, III, IIID, IIIP) 1MB/2MB/4MB	95/135/215
Pacific 4 SIMM Memory (for HP IV, IIISi, XL300) 4MB / 8MB	179/329
LP Memory (for IBM 4029E) 1MB/2MB/3.5MB	129/179/249
Pacific T Memory (for Epson 6000) 2MB / 4MB	209/299
PELICAN All type ribbons	visit us

18 SCANNER

TAMARACK ArtiScan Flatbed Scanner 24 bit color, 256 gray levels, comes with Picture Publisher LE 3.0 and Recognita plus OCR or PhotoStyler Full 1.1 only, SCSI interface

TTI 6000C 600dpi	1145
TTI 8000C 800dpi	1445
Slide Scan Kit (transparency,slide,X-ray)	595
MICROTEK Scan Maker 600Z	1295

Hand scanners. . . see Logitech in section #17

E-TECH

4256G 256 gray scale (w/OCR)	149(169)
4200C 256/4096 color (w/OCR)	295(319)

19 TAPE BACKUP

COLORADO

DJ-10 (120MB) QIC-40 w/ cable	$189
DJ-20 (250MB) QIC-80 w/ cable	255
AB-11 External tape port	45
Cable (2 Floppies & tape back up)	9
FC-10 Controller	95
KE-09 Ext kit w/o controller	75
TC-15 controller w/ data compression	195
Unix/Xenix driver for DJ-10, 20	129
QFA-700 (700MB)	725
TC-02 adapter (required)	259
Trakker 250MB ext. (printer port)	415
Trakker 120MB ext. (printer port)	355

EVEREX

EV-811 8 bit adapter QIC-02 for XT,AT	105
EV-880 floppy tape adapter for AT	65

MICRO SOLUTIONS (External)

120MB / 250MB External (printer port)	349/399

MOUNTAIN NETWORK SOLUTIONS

FS1200 1.3GB,4mm,SCSI cont,int/ext	3595/3905
FS2100 2.2GB, 8mm, w/ SCSI cont, ext	4895
FS7250 150-250MB, QIC-02, w/ cont, ext	1435
FS7250 250MB, w/ SCSI cont, ext	1565

SUMMIT

SE120 120MB w/ Central Point Back up	189
SE250 250MB w/ Central Point Back up	255
SE305 350MB Backup	349
Accelerator board for SE120 & SE250	165

SYSGEN

250 MB External w/ Floppy tape controller	375

CASSETTES

3M, VERBATIM	call

20 VGA CARDS

Desktop TV	319
Hauppauge Win/TV (New)	465
Prolab Video Master	185
SIIG Multimedia Video Grabber Plus	349

All cards 1024x768 except as stated

CGA / MGP card (Monographic w/ Printer)	$29
ET4000 Tseng Lab 1MB	99
Oak067 Super VGA 512K	52
Oak077 Super VGA 1MB	69
SVGA 256K	55

AMI

FastView EISA VGA Graphics w/ 1MB	499

ATI

PC Stereo Sound Card	115
VGA Stereo 512K w/ speakers	239
Wonder XL 24 w/ mouse, 1MB, Hi-color	169
Graphics Ultra 1MB (VRAM) w/ mouse	295
Graphics Ultra Plus 1 / Plus 2	309/359
Graphics Ultra Pro 1 / Pro 2	459/559
Graphics Vantage 1MB(DRAM) w/mouse	235

DIAMOND

SpeedStar 24X w/ 1MB 16 million colors	179
Stealth 1MB, VRAM, w/Sierra Hi-color	225

EVEREX

Viewpoint NI 256K/512K	129/149

GENOA

7900 1MB, 16 million color, 24 bit	159
8860 1MB 1280x1024 Hi-color	239

MYLEX

GLE911 EISA, 1280x1024, 1MB	409
GXE020B 1280x1024, 4MB DRAM 2MB VRAM, TMS34020, Tiga/EISA	1039

NUMBER NINE (TI34020)

GXI Lite Level 21 1024x768 16 colors at 72 Hz	725
GXI Level 23 for CAD/Win 1280x1024 16 colors at 72Hz, 1MB VRAM 1MB DRAM	1209
GXI Level 24 for Windows 1280x1024 256 colors at 72Hz, 2MB VRAM	1279
GXI Level 25 for CAD/Win 1280x1024 256 colors at 72Hz, 2MB vram 1MB dram	1429
GXI Level 29, 24 bit 1280x1024 65536 colors at 72 Hz 4MB vram 1MB dram	1719

ORCHID

Fahrenheit VA/ VLB, windows accelerator w/voice annotation, VESA Local bus, 1MB,24 bit	225
Fahrenheit 1280-D 1MB with Hi-color	225
Fahrenheit 1280 w/ Accelerator 24 bit	225
ProDesigner IIs 1MB with Hi-color	139
ProDesigner IIs-D 1MB with Hi-color	189
ProDesigner IIs, 1MB, Hi-color for MCA	349

UNITED SOLUTIONS

Utra 1MB 1280x1024 Hi-color	139

III SOFTWARE

ADOBE

Illustrator 4.0 Win./ upgrade competitive	359/185
Plus Pack for Mac / Windows	119
Postscript Cartridge for HP II	239
Type Cartridge 1 / Type Cartridge 2	99
Streamline for Windows	125
Type Align /Type Manager for Windows	63/59
Type Set 1/2/3 for Windows	65/65/129
Type Set: Overheads & Slides (special)	75
Type Set: Spreadsheets & Graphs (special)	75

AUTODESK

AutoSketch for windows / DOS	179/149
Generic CADD 6.0	299
Graphic Impect / Instant Artist	95/49
Multimedia Explorer	120

BORLAND

C++ Professional 3.1 for Windows	325
C++ 3.1 for Win & Application Frameworks	485
dBase IV 1.5 (special)	439
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Paradox 4.0 / upgrade	499/185
Quattro Pro WINDOS / upgrade WinDOS	299/139
Quattro Pro upgrade for Win / upgrade 4.0	99/85
Quattro Pro 3.0 + upgrade 4.0 (bundle)	199
Quattro Pro 3.0 + upgrade for Win (bundle)	220
Screenery (Windows wallpaper, screen saver)	25
Turbo C++ for Dos / Windows	69/105
Turbo Debugger & Tools 2.0	99
Turbo Pascal 7.0 (new) / for windows	119

LOTUS

1-2-3 for Windows (special)	325
1-2-3 Rel 3.1+ for DOS	385
1-2-3 for UNIX 1.1 single	499
Ami Pro for Windows	265
Smart Suite (123 win,Emi,Freelance,ccMail)	450

MICROSOFT

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Maxx Pedals for PC	39
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Power Point for Windows/upgrade	299/97
Project 3.0 for Windows/upgrade	419/145
Publisher for Windows	125
Quick Basic Compiler 4.5	65
Quick C for DOS / Windows	69/125
Quick C Compiler w/ Quick Assembler	125
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Test for Windows	249
Visual Basic for Windows 2.0 (new)	129
Pro Tool Kit for Visual Basic	185
Visual Basic w/ Pro Tool Kit	309
Windows 3.1/ up grade	65/49
Windows 3.1 Device Driver Development Kit	315
Windows for Workgroups	165
Windows for Workgroups add on (to win 3.1)	69
Word for DOS / Windows	207/299
Word for Windows upgrade to v2.0	125
Works for Windows	125

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SCO ODT Personal System 2.0 / tape	1170/1086
SCO Multiview 386 1.6.1	299
SCO XENIX-NET 386 single seryer v1.3.0	685
UNIX 386 Dev Sys 3.2.2 C-Compiler & Dev Tools	899
UNIX 386 GT Oper Sys 3.2.2 Multiuser	899
UNIX Operating System 3.2.4	899
XENIX 386 Dev Sys 2.3.1 C-Compiler& Dev Tools	610
XENIX 386 GT Oper Sys 2.3.4	585

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WordPerfect upgrade for DOS	75
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Aldus Freehand 3.0 for Windows	379
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Persuasion 2.1 for Windows (special)	299
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Da VINCE eMail 2.0	485
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Winfax Pro	75
XTree Gold 2.5 / for win	89/39

Seasonal Specials

Educational Software	on sale
Games	on sale
Microsoft Press Books	$5/$9

■

Continued from page 220

program, and is both highly organized and well written. The entire package has a strong environmental motif. The program comes with a large and beautiful set of icons, which can be attached and used by any Windows program or data file. There's a gorgeous Find File feature. The two biggest weaknesses are its speed (it's a relatively slow program, especially compared with XTree) and slow screen refresh (it can wash out the graphics on the entire Windows screen).

The depth of Trailblazer's features don't quite put it in XTree's class. With all of this in mind, I really do like this program. And if Twisted Pine could make the graphics performance a little crisper, the Trailblazer would be even better. (Twisted Pine Software, Inc., 9320 Hillside Trail S., Cottage Grove, MN 55016-3400. 612/458-5833)

VISUAL BASIC FOR MS-DOS

Published By: Microsoft

List Price: Standard Edition, $199; Professional Edition, $495

Reviewed By: Paul Hoffman

Most PC users who learn to program learn the Basic language first. Although Basic has long been dismissed as a student language, thousands of commercial and shareware programs are written in it. Microsoft has kept Basic alive on the PC with its QuickBasic compiler on the low end and the Basic Professional Developer System on the high end. Most Basic programs have ugly interfaces because it is much easier to make ugly Basic programs than it is to make ones with pull-down menus, dialog boxes, and so on. Visual Basic for MS-DOS changes all that.

Last year's introduction of Visual Basic for Windows was a bust due to the difficulty in making programs written in that package available to others. Visual Basic for MS-DOS looks and feels like Visual Basic for Windows but is much more versatile. You can easily compile your program into an .EXE file that you can distribute, and you don't have to worry about what kind of system the recipient has. The Professional Edition is truly professional, with full-powered development tools, a database engine, and many other features. Even if you are just a tinkerer, you will find that you can create good-looking programs in under an hour with Visual Basic for MS-DOS. (Microsoft Corporation, One Microsoft Way, Redmond, WA 98052)

WINTOOLS

Published By: Tool Technology Publishing

Reviewed By: Rich Grace

Like its competitors, WinTools is a Windows Shell program that sits on top of the Windows user interface, but the resemblance to its competitor ends there. WinTools radically changes Windows, almost making it unrecognizable. WinTools places an object oriented-like face on Windows: anything—a program, file, or even a group of associated files—can be represented by an icon on the desktop. Windows does the same thing, but WinTools brings the object metaphor to a higher level. What does it do for you? Well, this is supposed to make your work easier by making all your things—icons, if you will—relate to each other.

WinTools has many nice features that allow you to customize its look and feel. You can even use your favorite Adobe fonts for your icon titles, as well as customizing colors and attaching passwords to individual files or programs. In WinTools, windows explode onto the screen much the same as folders on the Macintosh under System 7 (presenting Windows users a more polished appearance). A major selling point of WinTools is Big Sky, a program that allows you to pan your screen viewing area over a space sixteen times greater than your original screen. This allows you to organize your software libraries into separate work areas. WinTools also has a small but pleasing file manager.

WinTools is probably not everyone's cup of tea—its changes to the Windows interface are fairly traumatic. After you try it and decide it is not right for you, be careful! If you're not careful during Uninstall you may wind up wiping out your Windows directory. Though I am not using WinTools as my everyday environment, I like this program quite a bit. It's unique, and does many things I wish Windows would emulate. Visually, I consider it more attractive than Norton Desktop, but not quite as straightforward. (Tool Technology Publishing, 1125 A St., Suite 107, San Rafael, California 94901. 415/459-3700)

WORDSMART

Designed By: Johnson O'Connor Foundation

Published By: Smartek

For: MS-DOS (512K, VGA, EGA, CGA, or Hercules video), audio tape cassette player also required.

List Price: $49.95 per volume ($39.95 if two or more volumes are purchased at the same time), Windows and Macintosh, $59.95.

Reviewed By: Mike Markowitz

What if you could raise your SAT score by one hundred points by spending twenty hours with a computer program? That kind of dramatic result is typical for users of WordSmart, according to publisher David A. Kay. Computer history fans may remember the name—that's David A. Kay of Kaypro; he knows his software.

Since the standard vocabulary of television is limited to a few action verbs (hit, kill, shoot, stab, drive, buy) and a narrow set of adjectives (new, improved, lite, blonde), there is an urgent need in our dying educational system for something that can effectively teach kids to use words.

WordSmart is based on over sixty years of research by the Johnson O'Connor Foundation. Dr. O'Connor, a pioneer in the field of aptitude testing, developed comprehensive lists of the English words that were most frequently misunderstood by adults. The program includes over two thousand words in ten carefully sequenced packages or "volumes."

The first volume includes items ranging from fourth to twelfth grade level; the tenth volume includes items ranging from college freshman to Ph.D. level. Each volume includes two 90-minute audio tapes keyed to an interactive computer tutorial. The audio tapes are professionally narrated. Each package includes one 3.5" and two 5.25" disks. A brief instruction booklet provides minimal documentation.

Words are presented in groups of twenty, with a variety of different activities: Multiple Choice (with audio discussions), Flash Card quick definitions, Column Matching, Sentence Completion, and a little Laser Review Game in which you can zap the correct answer.

The program combines regular text with a very readable, extra-large Roman typeface. The user interface relies mainly on Page Up, Page Down, Enter, and the cursor arrows (no mouse support). The program asks for your name, and keeps track of your performance, telling you when you are ready to move on to the next volume. An Options menu gives you control over color and sound (this is important, since the sound effects can be really annoying to other users).

Here's a typical set, from Volume D (seventh grade through college junior level):

FLUCTUATE
DEMOCRACY
ABASH
FISCAL
OPAQUE
PETRIFY
DIAL
POTION
SAUNTER
PIROUETTE
TEPID
ARTICULATE
COMPORT
ABDICATE
MOROSE
PACIFIC
SYNTHETIC
EFFRONTERY
BREACH
SOMNIFEROUS

Some of the vocabulary strikes me as antiquated, but if you want to read classic literature, you have to learn a lot of obsolete words.

WordSmart has been adopted by the Galveston, Texas, school district as a basic part of the high school curriculum. This package could be an asset to any school or adult literacy program that uses MS-DOS computers, since it works just fine on older or minimally configured systems. A CD-ROM version is under consideration. (Smartek, Inc., 2223 Avenida De La Playa, Ste. 108, La Jolla, CA 92037. 1-800-858-WORD)

CREATIVE TOOLS

Looking Twice At The Portable Desktop

SCSI Monitors

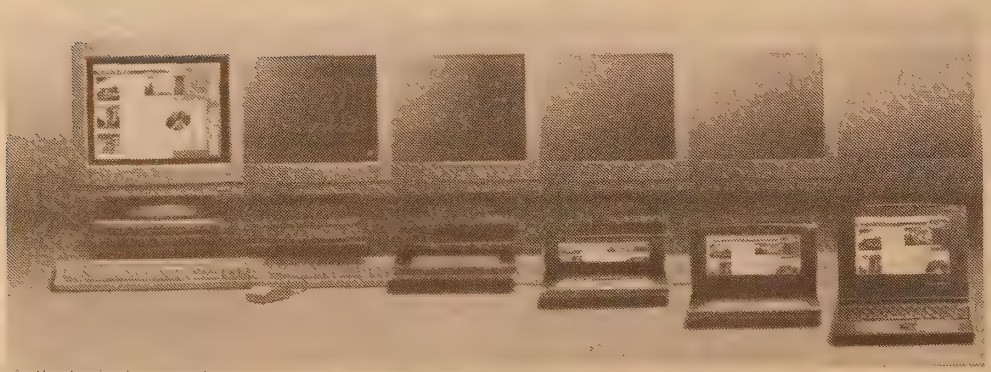
BY TONY REVEAUX

Apple's new Macintosh PowerBook Duo with the Duo Dock, and Mirror's ViewPort SCSI display, are both at the leading edge of desktop computing. They illustrate how the desktop is traveling, expanding and reconfiguring itself as the personal computer responds to the ways we really need and want to work.

They are also symptomatic of how the edge hasn't quite reached the full solutions.

LOOK WHO'S DOCKING NOW

As much as I admire the entire PowerBook line, handling the 4.2 pound 33-MHz '030-based Duo was a revelation. Without an internal floppy disk drive and many other details, but built on an aerobic-light magnesium frame, the external envelope—with recessed keys, smaller 19mm trackball and rounded corners—seems like Apple designed it in a wind tunnel. With the screen flipped up, I could hold Duo in my left hand and (sort of) type with my right hand. Not for very long, perhaps, but the experience gave me the vision of what a fully functional Personal Digital Assistant might be like some day.


The Duo operates with or without an external monitor.

The PowerBook Duo 230, and the "slower" 210, are as fast, free and independent as a teenage runaway—which is to say, sooner or later they'll need to come home. Apple's ingenious Duo Dock, supporting a monitor of almost any size, acts like the VCR to the Duo's videocassette. Flip down the screen of the PowerBook Duo, insert it in the slot of the "mothership" Duo Dock, and in it slides automatically. Boot it up, and it's showtime. With the Duo Dock's internal SuperDrive, external connectors and internal battery charger, and with a full-size monitor and regular keyboard, you have a full desktop Mac, running off the PowerBook Duo's processor and memory. You can pick up in the office right where you left off in the field.

What's missing? The PowerBook's screen is not available, thus denying the user a two-screen system. For most users, one screen of data and activity is as much as they can handle. Increasingly, as software becomes more and more feature-rich and the range of applications, networking and responsibilities increases, a larger size monitor and/or a two-monitor system can offer some advantages. Many managers and other business-people need to work with several applications simultaneously, and System 7 makes that much easier to do.

SCSI MONITORS

For the other PowerBooks, and many notebooks and portables, the desktop answer can be a SCSI monitor—a self-contained, full-size monitor that can accept the PowerBook input through a connecting cable, without an intermediary adapter box and/or PC. Punch in the plug, and the PowerBook becomes your main Macintosh for full-day, round-the-clock office work. (A good roundup of these SCSI monitors can be found in the 10/5/92 issue of *MacWEEK*.)

A new addition is the Mirror ViewPort 15-inch SCSI monochrome Portrait Display. It easily connects to the PowerBook via the SCSI

Continued on page 268

A SCSI monitor—a self-contained, full-size monitor that can accept the PowerBook input through a connecting cable, without an intermediary adapter box and/or PC—lets the PowerBook become your main Macintosh for full-day, round-the-clock office work.

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Tony Reveaux, a San Francisco-based consultant, is the editor of Computer Publicity News *and a contributing editor for* Artweek, *and writes the "MediaScan" column in* Film/TapeWorld. *He can be reached via Internet (luna@well.sf.ca.us) or MCIMail 290-3008.*

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- 486DX-50 256k Cache
- Mini Tower Case 200Watt
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- Color 1024 x 768 .28 Video
- Keyboard / 2P 1S/ Game

$ 1780

386DX-40
Computer System
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- Mini Tower Case 200Watt
- 4mb Ram
- 120mb IDE Hard Disk
- 3.5" and 5.25" HD Floppies
- Color 1024 x 768 .28 Video
- Keyboard / 2P 1S/ Game

$ 1197

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Computer System
- 386SX-33 64k Cache
- Mini Tower Case 200Watt
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- 40 mb IDE Hard Disk
- 3.5" HD Floppie
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- 486DX-50 ISA Super Voyager	1230
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MousePen Pro	69.95
Orchid Fahrenheit 1280 24bit/1mb	179.00
Keyboard Desk Drawer	39.95
Plus much more	

Networking

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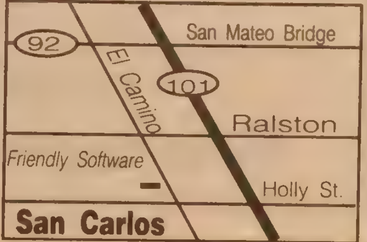

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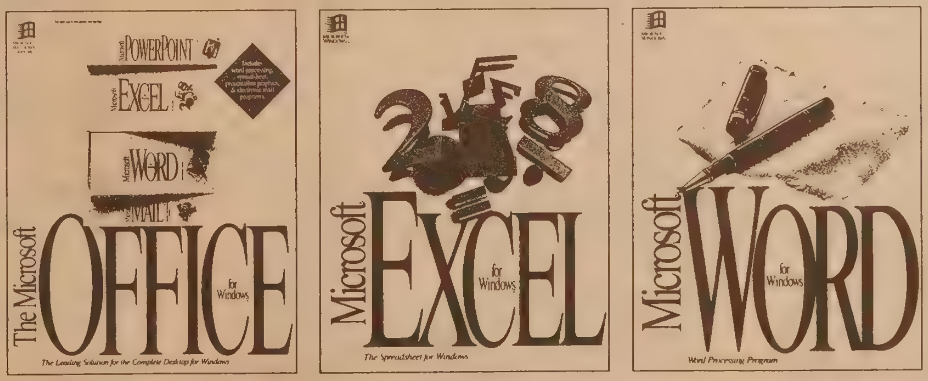
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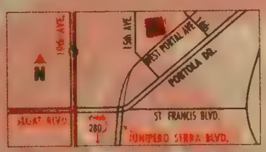

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Seybold Report, Holiday Cheer, Etc.

From Multimedia Toys To Multi-Buck Printers

BY DAVID MORGENSTERN

Nachman of Bratslav once said, "The learning for which you pay will be remembered longer." I'm unfortunately still learning, and learning, and paying, and paying!

I recently decided to give my daughter, Ariela, a tour of the various online services I subscribe to, including America Online (AOL), the Internet, and the amazing Planet BMUG, our new bulletin board service. I showed her the features of each system and the advantages of each. She asked if she could have her own account on AOL. Sure. Why not?

I spend the most time on the services that cost the least, especially Planet BMUG. There's plenty of lively discussion and good information. The other services provide convenient mail slots, and some have virtual BMUG meeting places.

BMUG

My initial thought was that Ariela would check out the Beverly Hills 90210 fanclub discussion group on the Internet—nice and cheap.

Instead, she has extended her native teenage talking skills into the "Hot Teen Chat" areas on AOL, costing around a dime a minute. Who would think that kids would be so interested in the temperature of their computers? I know it's some other hot topic—but don't tell me. I'm still learning...

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SEYBOLD BY THE SEA SHORE

The Seybold Exposition, now held in San Francisco's Moscone Center, is the annual pilgrimage destination for desktop publishers. It's not your run-of-the-mill computer show or swap meet. This is a non-stop technology demonstration for computer publishing professionals, with products from $75 to $750,000—no joke!

The only gloomy expressions were on the faces of those who thought this might be the time to pick up a bargain on a printer, modem, or software. Unfortunately, there's no selling on the exhibition floor. You can look and touch, but do not take home.

This year it was evident to even the most near-sighted observer that the eye of the publishing business hurricane was at the Seybold show. In years gone by, there were publishing veterans that considered desktop publishing "cute," or something for the hobbyist. You might ask how anyone could claim that a product running a quarter of a million dollars was a toy, but "real" publishing hardware products are complex and run into major money.

As the power and capabilities of desktop systems have evolved, the smarter established publishing system companies have migrated products down to the microcomputer. Although the cost of a high-quality entry-level "solution" in this market may seem inconceivable to the ordinary user on the street, to an experienced professional, it's a bargain.

Seybold's developing split personality was also very much in evidence. As the show is being pulled deeper into hard-core paper publishing, it's also moving into purely digital forms of information delivery. There were demonstrations of digital photography, multimedia, and desktop support for arcane information standards used in big business and government.

There was something for almost everyone. The booths featuring digital cameras in action drew eager crowds, especially when the model was a former Penthouse "Pet." Other demonstrations appealed more to the connoisseur, or trapped the unwary. I became the guest of honor, and audience of one, for an entire hotel suite full of marketing representatives, showing a set of documentware products ported from mainframes.

Here are a few of the products that caught my eye:

- Kodak had an exhibit of photographs and slides utilizing its Photo CD technology. Photo CD is an attempt to bring digital photography to the mass market. It allows users to combine their investment in film photographic equipment, with the convenience and flexibility of digital media.

Camcorders and video-based still cameras, like the Canon XapShot, have been stealing sales away from traditional film technology. People like the home movies, but also the ease of plug-and-play. But film photography still has many advantages over video—everyone has a camera, and they produce high-

> **"I have a Degas file from my friend's Atari ST—how can I use it on my Macintosh?" This is a common question on the BMUG HelpLine, except you can swap any and every flavor of computer for the Atari. People want to trade graphics files.**

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quality images that you can easily give to someone else.

Kodak is hoping that consumers will want to have their photographs scanned, placed on a CD-ROM, and then displayed on a home viewer attached to a television set, or a computer. High-resolution printers can use the digitized pictures to make photographic quality prints for your grandma or wallet. I recently noticed the machinery to make Photo CDs being installed in a nearby mall's photo shop.

Kodak showed four new flavors of Photo CD. PhotoCD Master is the name for the original format disks. Each disk can hold up to one hundred images, and each image is stored in five different resolutions or levels: a thumbnail, an image with a quarter of NTSC quality (American television), base quality (current NTSC), four times NTSC (close to the High Definition Television HDTV standard), and sixteen times NTSC. This last level is around the amount of information that is contained in a 35mm negative. The first three resolutions are stored as actual uncompressed images on the disk, while the higher resolution information is stored as data which is added to the middle base image.

ProPhoto CD is a new format for holding information from large format cameras. The Pro format allows photographers to include copyright information in the disk, and supports encryption. These are issues of particular interest to professional photographers. In a corner of the exhibition hall, there was an impressive display of huge prints derived from ProPhoto CD images. To my unprofessional eye they looked the same as photographic pictures, but this was not a side-by-side comparison.

Photo CD Portfolio is the new slide show or photo album format. It has enough room to hold eight hundred TV quality images or an hour of audio—or any mixture of the two. I saw an excellent African tour slide show, with narrated and musical segues. It was displayed on a television with Photo CD player made by Philips. This format will offer an easy way to send relatives family histories or wedding albums.

The other new formats are the Photo CD Catalog, which can hold six thousand thumbnail images, and a special Photo CD Medical, which allows for the inclusion of other data, like CAT scans or MRI data.

Apple announced that Photo CD technology will be incorporated into System 7 and QuickTime. There's a small hang-up. The Photo CD disks are multiple-session, so that you can add images from several rolls of film onto a disk at different times. Some current models of CD-ROM drives can read the first session, but not the additional images. This is a problem, but many drives hitting the streets in 1993 will be able to read the complete disk. If you're purchasing a CD-ROM drive, make sure that it can read a multi-session Photo CD.

•The most amazing hardware demonstration at the exposition was the Heidelberg GTO-DI four-color printing press. This is not a ordinary printer, but a full-size press, the size of a truck. It uses a technology called Direct Imaging that transfers the computer graphic that you've created on your Macintosh directly onto the printing plates, without film. This means no registration problems and a quick turnaround time—the imaging takes around a quarter of an hour. Since the press uses dry inks and there are no metal plates or film to process, there's a drastic reduction in the use of solvents and hazardous chemicals.

The press is designed for small high-quality "short-run" jobs of five hundred to five thousand copies, the most expensive when using traditional printing methods. The price of the press is not for the faint-hearted, however. The GTO-DI runs around $600K and you'll need another $100K for the prepress front-end software. The model showed at Seybold was a special order job for a printer in Boulder, Colorado. It sported a multicolored neon sculpture on one side. The owner plans to put the press in the storefront window of the print shop.

•Pixar had a booth across from BMUG's, so it was a snap to check out their new type program, Typestry. Typestry turns TrueType or Type 1 fonts into wild three-dimensional objects. You can take a word, rotate each letter separately, and even extrude the letters to make them thinner or fatter. Then you can add fantastic surface colors, effects, and shadows. The resulting images can be popped into your favorite desktop publishing program, or multimedia presentation.

•"I have a Degas file from my friend's Atari ST—how can I use it on my Macintosh?" This is a common question on the BMUG HelpLine, except you can swap any and every flavor of computer for the Atari. People want to trade graphics files. This is especially a problem for publishers and service bureaus. Equilibrium Technologies, a local Bay Area company, has the solution—deBabelizer, an automated graphics processing and translation utility.

DeBabelizer can translate to and from forty different graphic file formats for almost a dozen different computers, including Sun, Amiga, Apple II, DOS, and SGI. After converting an image, you can manipulate it in various ways. If you have a bunch of files to convert, you can use the automatic batch processing feature to crunch them with one

What Is BMUG?

BMUG is an educational, nonprofit, consumer advocacy group organized to share information and provide critical direction to users and developers in the computer community worldwide. It is an independent advocate, not affiliated with any manufacturer, delivering trustworthy information and useful products.

Like any growing organization, it is many different things to its thirteen thousand international members. BMUG supports many Special Interest Groups (SIGs), a Bulletin Board System (BBS), free HelpLine, software library, weekly meetings, publications, and much more. BMUG also puts out a semi-annual 400+ page book that we call our "newsletter."

Our motto continues to be: *We're in the business of giving away information.*

Come and join in the dialogue at the BMUG main meeting every Thursday evening, 6–9 pm (or whenever we finish), in the Physical Sciences Lecture Hall on the UC campus. BMUG West is a meeting held monthly in the Exploratorium, San Francisco's science museum.

The BMUG Office, 2055 Center St. (a half block from the BART station) is open to the public from 9 am to 5 pm. Please come by and say hello, meet other members, and hang out.

The BMUG HelpLine, (510)540-1742, and our fax number, (510)849-9026, provide technical assistance and telephonic hand-holding during business hours (11 am–5 pm). If your question can't be answered on the spot, we try to get you in touch with someone who can help. Of course, not every problem can have a happy ending—but we try.

BMUG has one of the most up-to-date, comprehensive software libraries around with hundreds of disks filled with the latest versions of public domain or shareware programs, and HyperCard stacks. New disks are unveiled almost every week at the Thursday general meeting. BMUG also brings you the *TV-ROM*™, a fantastic collection of public domain QuickTime videos.

Our sixteen-line BBS offers many of the latest versions of files in our software library as well as news, private mail, rumors, etc. The BMUG BBS is part of the worldwide EchoMac Network on FIDOnet (161/444); by calling a local FIDOnet BBS in your area, you would then be able to get in touch with us wherever you are, as well as send mail to users everywhere! With our multiline capability, you can have access to BMUG almost twenty-four hours a day. It's easy to use, fun, and a great resource.

BMUG can be found on most electronic services. BMUG can also be reached through the international USENET network through bmug@garnet.berkeley.edu.

To get some further information about BMUG please write to: BMUG, 1442A Walnut St., #62, Berkeley, CA 94709. If you prefer to phone our business office call (510)549-BMUG, or fax (510)849-9026.

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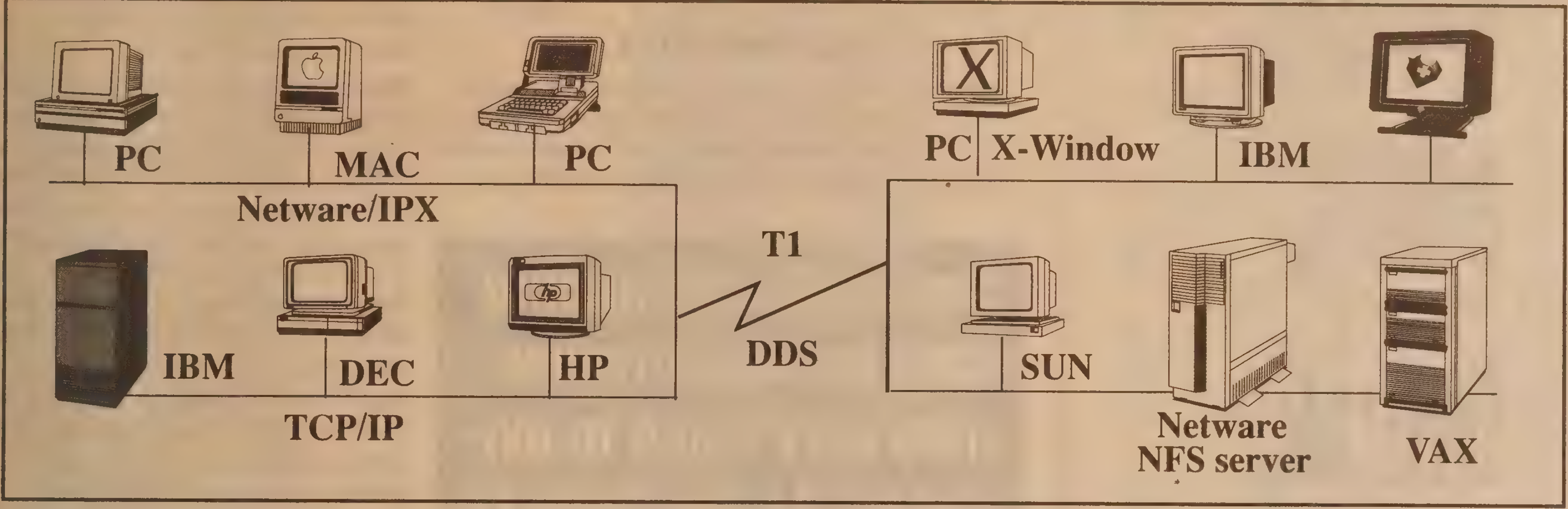

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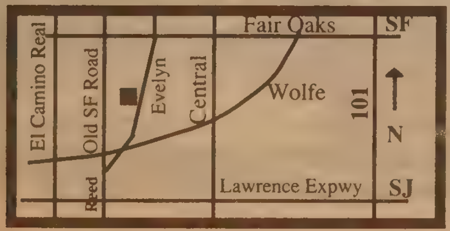

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BYTES AND PIECES

•BMUG is holding its annual fall membership drive. I encourage every reader to join in the fun and become a BMUG member at this time. There will be special drawings for prizes, including software packages, and a speedy modem. Members receive the incredible advertising-free book we call the *BMUG Newsletter*, assistance on the HelpLine, and full access to our exceptional graphic user interface bulletin board system. Your membership contribution enables us to be an independent voice for all computer users, delivering trustworthy information, without affiliation with any particular manufacturer.

> **Seybold's developing split personality was also very much in evidence. As the show is being pulled deeper into hard-core paper publishing, it's also moving into purely digital forms of information delivery.**

BMUG membership goes to support our meetings, volunteer programs, and online systems. We're proud that all BMUG meetings are free and open to the public. The minutes of our weekly meeting are eagerly read around the world for their open free-wheeling discussions of technology and their pull-no-punches honesty. BMUG and its Special Interest Groups (SIGs) hold more meetings in a month than other groups dream of holding in a year. BMUG depends on the hard work, generosity, and spirit of our members and volunteers. All this is made possible by your individual BMUG membership. With your commitment to BMUG, we can continue our commitment to education, helping, and advocacy to the community of computer users.

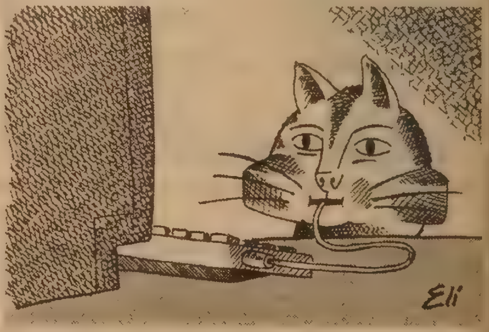
Upcoming Events:

December 3	Hewlett-Packard, new color printers; Berkeley Systems, Star Trek Modules for After Dark screensaver.
December 10	Eclectic Software, NetVantage II.
December 17	No BMUG Meeting due to Finals.
December 21	BMUG South at United Way Building in San Jose. To be announced.
December 24	Merry Christmas. No BMUG Meeting.
December 28	BMUG West at Exploratorium museum in San Francisco PBM Software, Square One (graphics utility).

•The Freedom, Privacy, and Technology SIG is one of BMUG's most interesting special interest groups. Its meetings investigate the effect of technology and computers on society and civil liberties. Speakers at the meeting have included John Perry Barlow, the co-founder of the Electronic Frontier Foundation; Robert X. Cringely, author of *Accidental Empires*; and Richard Stallman from the League for Programming Freedom. Please call the BMUG announcement line to get information on the next meeting.

The Berkeley chapter of Computer Professionals for Social Responsibility has published a 26-page pamphlet called, *A Computer and Information Technologies Platform.* The Platform lays out a broad "program for research, development, and implementation of computer and information technologies that will move towards resolving our most pressing social needs." Many of the planks of the platform are controversial and will spark a lively debate. The printed version is available for $4 from CPSR/Berkeley, P.O. Box 40361, Berkeley, CA 94704, or free electronically from jdav@well.sf.ca.us on the Internet.

• A great gift for the holiday season is BMUG's latest book, *Toonware: a humor interface,* by Eli. It's ine hundred pages of clever computer-related cartoons that will bring a smile to any computer user—Macintosh, DOS, or mainframe. The book costs $6.95. There is also a pair of Toonware T-shirts. One design shows the Virtual Office, and the other the cat/computer interface. The shirts are $15. These items are available from the BMUG Order Phoneline at 1-800-776-2684. ■



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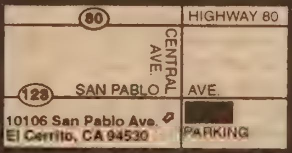

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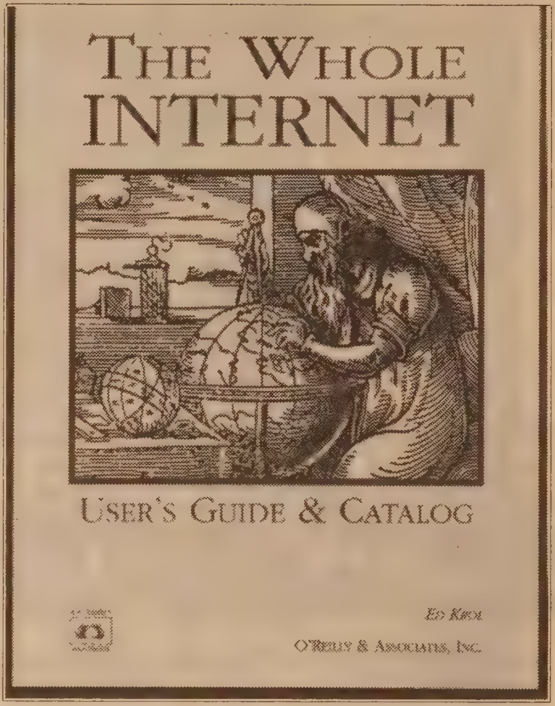

New Internet users typically bump into Ed Krol's *Hitchhiker's Guide to the Internet* and/or Brendan Kehoe's newer *Zen and the Art of the Internet* in their first weeks online. Sometimes they're recommended by more experienced users, sometimes they're discovered in a directory on some remote computer. Other times they're barely recognizable, having been cut, pasted, and paraphrased into a local computer center guide. But whatever journey they've taken, they're typically received with open, grateful arms by Internet neophytes.

The Internet—an international network of networks—is in a period of unprecedented growth, growing by 25% each quarter (*Matrix News* estimated that 992,000 computers were hosting between five and ten million users, but that was in July, 1992). Publishers are beginning to realize that there is a huge, untapped market for Internet "how-to's." The first wave of these books is hitting the stores, and it's nice to see pioneers like Krol and Kehoe leading the way.

Prentice Hall's 112-page version of Kehoe's *Zen and the Art of the Internet* is a minor upgrade of the February 1992 version available online. *Zen*'s transition to the printed page feels rushed; the layout and typesetting suggest that it went from the line printer to the presses quickly—so quickly that no one intercepted the Bitnet typo ("Binet") on the back cover. Krol's *The Whole Internet User's Guide & Catalog*, on the other hand, is not a rewrite of "Hitchhiker's Guide," but a brand new, 379-page entry in O'Reilly & Associates' Nutshell series.

The Internet—a international network of networks—is in a period of unprecedented growth.

Both authors strike a conversational tone, and cover Internet basics (e.g., site addresses), email, file transfer between sites (Anonymous FTP and Archie, a file locator), USENET newsgroups, logging on to remote computers (telnet), simple network tools (e.g., ping, whois), and commercial services (e.g., Clarinet). Krol's book consistently conveys a level of detail that Kehoe barely hints at.

Kehoe takes a generic approach to operating systems. Consequently, UNIX users aren't exposed to their systems' full capabilities and non-UNIX users will find examples that won't work for them. On the other hand, Krol underscores the differences between operating systems, putting UNIX center stage, but providing separate sections for VM/CMS, VAX/VMS, MS-DOS, and Macintosh users. People working with these differently-abled operating systems will appreciate Krol's approach.

Whole Internet opens with the big picture. Internet governance, finance, acceptable use, ethics, security, and current trends are introduced in chapters 2 and 4. This material is critical to ensure informed Internet use, and presenting this as central, instead of as afterthought, will hopefully become standard in all Internet guides.

Krol also devotes chapters to new tools for navigating the Internet: Archie, Gopher, WAIS, and World Wide Web. Each represents a different approach to synthesizing the decentralized resources available across the Internet. Without exception, Krol's explanation of these services is orders of magnitude better than those provided by the services themselves. Very well done.

Krol ends with a short chapter on diagnosing connectivity problems, and with appendices on different providers and grades of Internet access, country codes, a glossary, and an index.

Subtly sandwiched between the diagnostics and appendices is fifty pages worth of Catalog: three hundred resources arranged by subject—Aeronautics to Zymurgy—all available using the tools discussed in the *User's Guide*. *Zen*'s list of sites and services is small (roughly two dozen) and esoteric. Several popular sites are not listed, while obscure (but interesting) ones are. The appendices here include cross-network email, ftpmail, country codes, a glossary, bibliography, and index.

Kehoe's "Things You'll Hear About" chapter is a nice touch. He introduces organizations that are working to civilize cyberspace and shares anecdotes, e.g., Carnegie Mellon's Internet Coke machine.

Both *Whole Internet* and *Zen* could use better indices. I've already been unable to relocate resources I've noticed on previous passes. I don't want to use highlighters; I want long, full, redundant indices.

If you're looking for a single book on using the Internet, Krol's *Whole Internet Guide and Catalog* is your best choice for the forseeable future. While *Zen* is the kind of online resource that Internet users appreciate—widely available, informative, manageable—you should think twice before paying $22 for a softcover version, especially when *Whole Internet* is $24.95. If you're starting a collection of Internet books, Kehoe's *Zen* is worth including for its unique contributions (although with Krol in hand it only takes a few keystrokes to get the online version). And while other talented authors have Internet guides on the verge of being released, it's hard to imagine any of them significantly surpassing Krol's *Whole Internet User's Guide & Catalog*. ■

RESOURCES:

***Zen and The Art of The Internet*, $22.00**
By Brendan P. Kehoe
Prentice Hall Series in Innovative Technology
(212)373-8500

***The Whole Internet User's Guide & Catalog*, $24.95**
By Ed Krol
O'Reilly & Associates, Inc.
1-800-338-6887

Matrix News
Matrix Information & Directory Services, Inc. (MIDS)
1106 Clayton Lane, Suite 500 W.
Austin, TX 78723
(512)451-7602
Email: mids@tic.com

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Eric Theise is on the faculty at the Naval Postgraduate School, where he's responsible for teaching and research in wide area networking and human-computer interaction. He is best reached on The WELL (estheise@well.sf.ca.us), where he hosts the Matrix conference, co-hosts the Internet conference, and is part of a team installing a Whole Earth Gopher server.

RESOURCES

Calendar Of Events

CONFERENCES, SHOWS AND OTHER SPECIAL EVENTS

NOVEMBER

November 28 Computer Show & Sale. Solano Co. Fairgrounds. MarketPro. Call: (415)388-8893.

November 29 Computer Show & Sale. Alameda County Fairgrounds. Richard James. Call: 1-800-433-7469.

November 29 Computer Show & Sale. Sacramento. MarketPro. Call: (415)388-8893.

DECEMBER

December 3 Portable Computer Expo. Santa Clara. Connecting Point. Call: 1-800-303-9999.

December 3–5 The Open O/S Conference. San Francisco. DCI. Call: (508)470-3880.

December 5 Computer Show & Sale. Santa Clara County Fairgrounds. Richard James. Call: 1-800-433-7469.

December 6 Old Fashion Swap. Livermore. Computers & Ham Radio. Call: (510)447-7118.

December 7–8 The Personal Computer Outlook Conference. San Francisco. Technological Partners. Call: (212)696-9330.

December 7–10 Sun User Group Conference & Exhibition. San Jose. The Sun User Group and Sun Microsystems. Call: 1-800-433-1790. Email: sugshow@pcinews.lonestar.org.

December 7–10 10th Annual Sun User Group Conference & Exhibition. San Jose. PCI. Call: 1-800-727-EXPO.

December 12 Computer Show & Sale. Cow Palace. Richard James. Call: 1-800-433-7469.

December 13 Computer Show. San Francisco. Ft. Mason Shows. Call: (916)725-0228.

December 13 Computer Show & Sale. Alameda County Fairgrounds. Richard James. Call: 1-800-433-7469.

December 19 Computer Show & Sale. Oakland Coliseum. Richard James. Call: 1-800-433-7469.

CLASSES, SEMINARS AND WORKSHOPS

NOVEMBER

November 24 Computer Graphics And Desktop Publishing Forum. San Francisco. The Software Training Group. Call: (415)397-4158.

November 24 Intermediate Excel 4.0 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

November 24 Intermediate WordPerfect Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

November 24 Windows 3.1 Class. San Ramon. MicroTek Education Center. Call: 1-800-282-7990.

November 30 Advanced Microsoft Word 5.0 For Mac Course. San Francisco. Corporate Solutions. Call: (415)392-1021.

November 30 Intermediate 1-2-3 v2.3 Class. San Francisco. The Microcomputer Training Company. Call: 1-800-999-9654.

November 30 Intro To WordPerfect For Windows 5.1 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

DECEMBER

December 1 Beginning Paradox 3.5/4.0 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

December 1 FileMaker Pro I Course. San Francisco. Media Alliance Computer Access. Call: (415)771-7133.

December 1 Intro To Networks Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

December 1–4 C Language Programming Class. Santa Cruz. UC Santa Cruz Extension. Call: (408)748-7375.

December 1–15 Adobe Illustrator Class. San Francisco. Center for Electronic Art. Call: (415)956-6500.

December 2 FileMaker Pro II Course. San Francisco. Media Alliance Computer Access. Call: (415)771-7133.

December 2 Intermediate Excel 4.0 Class. San Francisco. The Microcomputer Training Company. Call: 1-800-999-9654.

December 2 Intro FoxPro 2.0 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

December 2 Macintosh PowerBook Class. Walnut Creek. The Microcomputer Training Company. Call: 1-800-999-9654.

December 2 Quattro Pro 3.0/4.0 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

December 2–4 Time Line 5.0: Project Management Software Workshop. San Francisco. Symantec Training Group. Call: 1-800-786-8620.

DECEMBER 5

CALIFORNIA COMPUTER SHOW & SALE

Santa Clara County Fairgrounds

The California Computer Show and Sale returns to the Santa Clara County Fairgrounds. This show will feature close to one hundred exhibitors, making it the largest show at this facility in 1992. The show will host direct importers and manufacturers, making it possible for you to pick up the latest software or peripherals for up to 80% off retail cost. Admission is $6.00 and shows run from 10 am–4 pm. Call: 1-800-533-7220.

DECEMBER 5

AMIGA MULTIMEDIA DAY

Winners Circle Systems of Berkeley is proud to announce the introduction of new products with a special showing of the entire line of Amiga products. Jim Daddio, Ken Brungess, and Cathy Ressler, from the corporate offices of Commodore, will be on hand to introduce the products and demonstrate programs and multimedia applications on the Amiga computer. Special pricing on Amiga products and systems will be available during this event. Call: Andy Jong, Winners Circle Systems, (510)845-2400.

FEBRUARY 8–10, 1992

COMPUTER SOFTWARE MANUFACTURERS TRADE DELEGATION

The US Department of Commerce is organizing a special trade delegation for US computer software manufacturers to London, England. This event, called Matchmaker, is scheduled to maximize timely export opportunities in the United Kingdom. The delegation is open to thirty-five qualified US manufacturers and offers one-on-one meetings with business contacts, thorough Embassy briefings, and assistance with hotel and travel arrangements. The participation fee is $1750 per company. Contact: David Posnar, L.A. District Office, US Department of Commerce, 11000 Wilshire Blvd., Rm. 9200, Los Angeles, CA 90024. (310)575-7214.

Continued

Calendar Of Events continued

December 2–23 Integrated Media Production II Class. San Francisco. Center for Electronic Art. Call: (415)956-6500.

December 3 Beginning Excel 4.0 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

December 5 Build & Upgrade An IBM PC Clone Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

December 5 How To Build Your Own 386 Or 486 PC Computer Class. Daly City. Skyline College. Call: (415)574-6563.

December 5 & 12 Korn Shell Language Programming Class. Santa Cruz. UC Santa Cruz Extension. Call: (408)748-7375.

December 5–19 Principles Of Animation Class. San Francisco. Center for Electronic Art. Call: (415)956-6500.

December 7 Intermediate 1-2-3 v2.3 Class. Walnut Creek. The Microcomputer Training Company. Call: 1-800-999-9654.

December 7–8 PC Repair Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

December 7–8 Project Planning Software Workshop. San Francisco. Symantec Training Group. Call: 1-800-786-8620.

December 8 FileMaker Pro 2.0 Intro Class. Walnut Creek. The Microcomputer Training Company. Call: 1-800-999-9654.

December 8 Intermediate FoxPro 2.0 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

December 8 Intro To MS-DOS 5.0 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

December 8 Intro To WordPerfect Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

December 8–9 QuarkXPress Class. San Francisco. Center for Electronic Art. Call: (415)956-6500.

December 9 DeltaGraph Professional Class. San Francisco. The Microcomputer Training Company. Call: 1-800-999-9654.

December 9 Intro To Lotus Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

December 9 Persuasion 2.1 Class. Walnut Creek. The Microcomputer Training Company. Call: 1-800-999-9654.

December 9–10 Novell System Supervisor 3.11 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

December 10 Intro To WordPerfect For Windows Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

December 10 WordPerfect For The Legal Profession Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

December 11 Excel 4.0 Intermediate Class. Walnut Creek. The Microcomputer Training Company. Call: 1-800-999-9654.

December 11 FileMaker Pro For Windows Class. Walnut Creek. The Microcomputer Training Company. Call: 1-800-999-9654.

December 11 Graphic Imaging Seminar. San Francisco. Micro Publishing News. Call: (310)371-5787.

December 11 Intro To Networks Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

December 11 Intro To Windows Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

December 11 Lotus 1-2-3: Advanced Macros

Continued on page 249

MONITOR REPAIR SPECIALIST

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- VALLEJO - Sat. Nov. 28 *Solano Co. Fairgrounds*
- SACRAMENTO - Sun. Nov. 29 *Scottish Rite Center*
- SANTA ROSA - Sun. Dec. 13 *Sonoma Co. Fairgrounds*
- VALLEJO - Sat. Dec. 19 *Solano Co. Fairgrounds*
- SACRAMENTO - Sun. Dec. 20 *Cal Expo*

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USER GROUP NETWORK

BULLETIN BOARDS

RESOURCE LISTING CHANGES

As electronic bulletin boards continue growing, system operators are adding phone lines that include additional area codes. Beginning with issue #100, *MicroTimes* introduced a "Multi-Zone" category for BBSes with access phone numbers in multiple area codes.

Thank you,
MicroTimes staff

MULTI-ZONE

Fantasy Network. (408)985-1529, (408)732-4908, (415)365-7002, (415)321-3661, (415)573-1063, (415)244-9218, (415)928-4781. Online, multiuser, Interactive D&D style, fantasy adventure game. Mid-Peninsula, South Bay, North Bay, and San Mateo. [Exp. #102.]

First Online. (408)247-1717, (415)598-0398, (415)992-3780, (510)254-5455. Over 30,000 files, 4.2GB, PC-SIG library, adult files. PC and compatibles. [Exp. #105.]

HoloNet Internet Access BBS. (510)704-1058; call 1-800-NET-HOLO for other nationwide numbers. 8-N-1, 24 hrs., 1200/2400/9600/14,400. Internet: telnet, FTP, IRC, MUDs. 3000+ Usenet groups. Free demo. [Exp. #104.]

Interactions BBS. (408)258-8913, (415)469-5510, (510)832-0560. 12-line chat (over 18 only), email, shareware library, two-week free trial. Sysop: C. Watson. [Exp. #102.]

Phosphor BBS. (408)259-0369, (510)794-6401, (510)794-2808. Multiplayer games, files, 14 lines of chat, MNP5/V.42bis. Sysop: Glenn Sanders. [Exp. #105.]

Portal Communications. (408)725-0561, (300–2400); (408)973-8091, 9600–57,600); (415)965-8095, (300–57,600). 8-N-1, Worldwide X.25 online, BBS & UUCP connections. Voice: (408)973-9111. [Exp. #104.]

Pro-Line BBS. (408)226-3880, (415)390-0763, (510)357-2637. 24 hrs., 22 lines, chat, lrg. library, jobs online, matchmaker, and more. [Exp. #105.]

Public Domain Software Exchange. (415)571-6911, (707)444-9203. 8-N-1, 24 hrs., 1200/2400. Multiple message areas, large file library, chat, two lines. [Exp. #102.]

209

BerthaBoard. (209)823-0093. 1200–14,400 V.32. Three lines, 4.5GB, 65,000 files, lrg. msg. base. [Exp. #102.]

Pacific BBS. (209)962-4045. 1200–38,400. Adults only—over 5000 adult files, electronic graffiti, and games. Sysop: Ed Peterson. [Exp. #105.]

408

24-Hours-a-Day BBS. (408)448-1126. 24 hrs., 300/1200/2400/9600/14,400. 12 Step Recovery Programs, echo mail, shareware, psychological files. Sysop: Mike R. [Exp. #105.]

A32 Macintosh User Group BBS. (408)263-0299. 24 hrs., 2400. Second sight, members only. Voice: (408)263-0398. [Exp. #102.]

Amateur Action BBS. (408)263-3393. 8-N-1, 1200/2400/9600. 100% Adult Amateur GIF files, eight lines. [Exp. #104.]

Amiga (The Dungeon) BBS. (408)384-6370. 24 hrs., 1200/2400. Games, files, info on Amiga viruses, some IBM files. Sysop: Garnett Sanders. [Exp. #102.]

Andy's Tavern. (408)223-1571. 24 hrs., 2400. Two nodes. IBM, Mac utils, GIFs. Free, for now. Sysop: Andrew N. [Exp. #104.]

Apple Byte GS. (408)578-3201. 24 hrs., 1200/2400/9600/14,400. Apple II Support BBS, member FVNet, running Metal/FutureVision, 685MB. Free. Sysop: Jim Buchanan. [Exp. #104.]

Atomic Dog BBS. (408)223-1931. 8-N-1, 1200/2400/9600/14,400. 660MB HD & CD-ROM. Free access. [Exp. #104.]

Bare Bones BBS. (408)272-2173. 8-N-1, 24 hrs., 9600. Two lines, Mac file transfers. Free, instant validation. Sysop: L'il John. [Exp. #104.]

Bay Area Atari User Group (BAAUG) BBS. (408)986-0215. 8-N-1, 24 hrs., 300/1200/2400. [Exp. #105.]

BayNar-Net. (408)926-8547. 24 hrs., 2400. Model rocketry, astronomy, Ham, kids. Family oriented, NAR affiliated. Sysop: Phil Hayton. [Exp. #104.]

The Beggar's Tomb. (408)243-TOMB. GIFs, stories, and animation for adult orientations. Sysop: The Grim Reaper. [Exp. #105.]

Berryessa Central. (408)946-5642. 8-N-1, 1200/2400/9600/14,400. All computers, interesting message sections. Sysop: Mark Shapiro. [Exp. #104.]

Bluemaxx BBS. (408)229-9597. 14,400. 7000 XXX GIF txt files, $9.99. Sysop: Ripper Jim. [Exp. #105.]

Blue Smoke BBS. (408)265-4600, (408)269-4127. Adult files, SIGs. Free telex with membership. Sysop: Timber Wolf. [Exp. #102.]

board8. (408)338-7052, 338-7954. 24 hrs., Full network news and worldwide mail via UUCP. Free. [Exp. #104.]

Bootleg CD-ROM BBS. (408)226-9597. 14,400. Huge ratio, 10,000 files. Free access. Sysop: Ripper Jim. [Exp. #105.]

Burn This Flag. (408)363-9766. 9600. Topics from Abortion to Zionism. NIRVANAnet. No fee. [Exp. #102.]

CAD Solutions BBS. (408)366-1009. 1200/2400/9600/14,400.

Continued

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BAY AREA BBSes

By Kathleen Creighton

Board Miscellany

Is it time for you to upgrade to a 9600 baud modem? Your old 2400 baud modem, a shareware communications program, installation, a little instruction, and a list of great BBSes might be just the gift for the computer owner you know who's reluctant to go online.

This column includes a source for Bay Area BBS lists, and a sampler of local BBSes which demonstrate that the hobby isn't limited to tech talk and downloading shareware.

BBS LISTS

You can refer to the *MicroTimes* BBS listings to find new and interesting boards to explore, but one of the best discoveries of 1992 is **Bay List BBS** (510/339-1045, 2400 baud, 8-N-1, Julie McGrew, sysop), an Oakland BBS which is home to all Bay Area BBS lists (by area code), and a good selection of other lists, including an up-to-date US BBS list. Immediate validation and four incoming lines make it convenient to download what you need (no limit on downloads) and upload the current lists you come across elsewhere. In the message areas, put in a request for pointers to a BBS or list for which you're looking, or advertise your own BBS. Modem News and ASCII versions of these *MicroTimes* columns are also available for download.

CLASSIFIEDS BBS

If you're looking to buy, sell, or rent locally, or just for a general-interest BBS (CalNet, Fidonet, WildNet echo areas), Classifieds BBS has two lines waiting. (415/665-2475, 2400 baud, 8-N-1, John Suelin, sysop.) The BBS is open to everyone, but subscribers get more time online per day and access to Adult Net on completion of a questionnaire.

RECOVERY BBS

Recovery BBS is a forum for members of 12-step programs who are actively in recovery from addictions and compulsions, and also for those who are seeking help or information. In keeping with the 12-step tradition callers are allowed to log on using their first name and last initial or a handle if they choose. (415/255-2188, 2400 baud, 8-N-1, Rich Gorin, sysop.) Recovery BBS carries a variety of recovery echos, local and Fidonet; meeting listings and recovery-related text files are available to read online or to download.

Multiline, CAM software for today's PCB industry. Sysop: Jeff Miller. [Exp. #105.]

C-Message Weighting Messaging System. (408)377-7441. 1200/2400/9600/14,400. Radio scanners, telephony, frequency database, aviation, PCX clip-art. Sysop: Alfred Deisner. [Exp. #104.]

Code Room. (408)266-3818. 8-N-1. A Programmer's BBS. Tons of C files. Win & OS/2 prog. conf. FidoNet 1:143/326. Sysop: Ramin Akhbari. [Exp. #102.]

Comp-U-Ease. (408)286-8332. 24 hrs., Multiline, ACAD/Engineering, RIME regional email hub. Sysop: Stuart Smith. [Exp. #102.]

Creative Labs, Inc. BBS. (408)428-6660. 8-N-1, 1200/2400/9600/14,400. Technical support BBS for Sound Blaster, Video Blaster, and other Creative Labs products. Sysop: Bob Hogg. [Exp. #104.]

Cruzio. (408)423-9995. 8-N-1, 1200/2400/9600. Santa Cruz county email, USENET and scruz newsgroups, databases, files, MUD/chat. Sysop: Peggy Dolgenos. [Exp. #102.]

Crystal Caravan BBS. (408)263-0782. 8-N-1, 1200/2400/9600/14,400. Online games, PC files, Amiga .MOD files, etc. Free. Sysop: Dynax. [Exp. #102.]

The Dark Side. (408)245-SPAM. 24 hrs., Free access to Usenet and UUCP mail. Since .1985. Internet: darkside.com. [Exp. #105.]

Dating Tree BBS. (408)946-1431. 16 lines, online chat, email, matchmaking, and more. Since 1988. Sysop: Ima Gnome. [Exp. #102.]

DC-To-Light. (408)262-5150. 8-N-1, 24 hrs., 300/1200/2400/9600. MS-DOS, CAD, UNIX, WIN, LAN & HAM: Conferences and email. Sysop: Fred Townsend. [Exp. #104.]

The Electric Pages. (408)253-4280. 300/1200/2400. Commercial and private advertising. Select by category or key words. Voice: (408)253-1709. Sysop: Contemporary Communications, Inc. [Exp. #104.]

The Enclave. (408)338-9754. 8-N-1, 300/1200/2400. Writers' BBS, etc. Local forums, Usenet news, UUCP mail. Free. Sysop: Raven. [Exp. #102.]

The Engineers' Club. (408)265-3353. 8-N-1, 24 hrs., 1200/2400/9600/14,400. Technical files, messages, and users. Sysop: Robert K. Griffith. [Exp. #104.]

Escape To Other Worlds BBS. (408)956-1750. 8-N-1, 1200/2400/9600/14,400. Three lines, SF, fantasy, comics, games, msgs. Mac and PC GIFs. [Exp. #105.]

Fun Seekers. (408)379-0958, 379-9680. 8-N-1, 24 hrs., IBM utils, games, adult, Win, Mom, kids. Designed with the family in mind. [Exp. #105.]

Garlique Graphics. (408)847-0665. 24 hrs., 2400/9600. When only the best will do. [Exp. #105.]

Gizmonic BBS. (408)445-1203. 8-N-1, 1200/2400/9600/14,400. Games, utils, GIFs, Win, animations, aviation, adult files. [Exp. #102.]

The Haunted Castle BBS. (408)226-1052. 2400/9600. Two nodes, 600MB online. [Exp. #102.]

HeartBeat Earth. (408)257-2306. 8-N-1, 300/1200/2400. Silicon Valley's Green Online Interactive publication. TechNet, WildNet, files. Sysop: Marcus Johnson. [Exp. #104.]

Infoserve Connections. (408)243-2102. 8-N-1, 24 hrs., 2400. UUCP/Usenet/email for DOS, Mac, and 386/UNIX. Sysop: B. Oesterreich. [Exp. #102.]

The I/O Temple. (408)427-3453. 8-N-1, 1200–14,400. Msg bases, online games, and more. FidoNet 1:216/513. Sysop: Armand. [Exp. #102.]

The Land Of Garg BBS. (408)378-5108. 8-N-1, 24 hrs., 1200/2400. Internet mail, regional newsgroups, religious file section—Roman Catholic emphasis. Sysop: Bob Van Cleef. [Exp. #104.]

LaserLight BBS. (408)496-0771. 8-N-1, 24 hrs., 2400/9600/14,400. IBM, best games in town! Apogee, EPIC, Moraff & MVP Release site. Sysop: Robert Mueller [Exp. #105.]

Lynn-Western Newswires. (408)778-5994 & 778-9656. 8-N-1, 24 hrs., 1200/2400. FidoNet 1:143/304. Professional information on technology, management, and worldwide investment news. Stock Market data online. [Exp. #104.]

Magic Kingdom BBS. (408)245-3961, 253-2426. 16 lines, teleconference, multiplayer games, SIGs, files, and more. [Exp. #102.]

Mail Stop. (408)257-1919. 8-N-1, 24 hrs., 300/1200/2400. Free, private email and SIG system. Internet mailboxes avail. [Exp. #102.]

Mongoose BBS. (408)733-3034. 24 hrs., 1200–38,400. We're back, better than ever! Over 2GB of space and files. Free access. Sysop: Robert Yag. [Exp. #102.]

Monterey Gaming Systems. (408)655-5555. 300–14,400. Eight lines, conferences, email, messages, custom games. Free. [Exp. #102.]

Moose Is Loose BBS. (408)773-9573. 1200/2400/9600. The best message base under Sunnyvale's fruit can. SASE reg. required for file access. Sysop: John Giever. [Exp. #104.]

The Mud Hole BBS. (408)865-1621. 14,400. Great door games and messages. [Exp. #105.]

Pacific Exchange BBS. (408)946-8561. 12 lines and over 40,000 IBM files. Since 1986. [Exp. #102.]

PIE BBS Loves High Speed! (408)733-4670. 8-N-1, 300/1200/2400/9600/14,400. Three lines, Macintosh, Apple II & GS, MS-DOS/Windows. Sysop: Clay Walker. [Exp. #102.]

Positive Image Studio. (408)270-8996, 270-8916. 8-N-1 24 hrs., 19,200 FirstClass software, 4GB files online, Mac & IBM software and util, adult graphics/animations. Memberships avail. [Exp. #105.]

Ring Of Fire BBS. (408)739-8753 (2400), 739-8371 (9600). BBS for United Sysop's Association and Silicon Valley Novell Users Group. Since 1983. Sysop: Bill Strouse. [Exp. #104.]

The Rising Storm. (408)739-8693. 8-N-1, 14,400. Emergency prep., firearms, politics, and more. Survival echos and files. Sysop: Kirk DeHaan. [Exp. #105.]

Second Source Parts, Inc. (408)727-1993. 8-N-1, 24 hrs., 300/1200/2400. Medical equipment, new & used parts, consumables, info & more. [Exp. #104.]

The Shrine BBS. (408)747-0778. Magick, religions, and sex. Adult and women's only areas by request. All lifestyles welcome. Sysop: Tom Joseph and Junell Zzz. [Exp. #102.]

ShrinkTank BBS. (408)257-8131. 8-N-1, 300/1200/2400 & 9600 for SuperModem users. Mental Health, Psychology, Men's Issues, Metrolink conferences. All users welcome! Sysop: Rob Bischoff, Ph.D. [Exp. #104.]

The Shuttle BBS. (408)998-2659. 24 hrs., 1200/2400/9600/14,400. Tons of multimedia files, GIFs, Win 3.x, midi, wav, SB/SBPro support. Sysop: Michael Vedda. [Exp. #104.]

The Silicon Connection. (408)492-9700. 24 hrs., 300/1200/2400. Electronic PenPal Network, 16 lines. [Exp. #104.]

Success BBS. (408)267-8325. 8-N-1, 1200/2400. S. Bay Entrepreneurs Assoc. BBS. Business opportunities, job shop, buy/sell, ads, personals. Networking for success. Free. [Exp. #104.]

The Support Network BBS. (408)259-0297. 8-N-1, 2–8 pm, 1200/2400/9600. Community computing for Santa Clara County. Sysop: Frank Arnold. [Exp. #102.]

SVCS BBS. (408)956-1204. 8-N-1, 24 hrs., 300/1200/2400/9600. Features MS-DOS, CAD, UNIX, GIF, WIN, LAN, & HAM. SIG conferences and email. Sysop: Fred Townsend. [Exp. #102.]

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Thunder Mountain BBS. (408)266-4553. 8-N-1, 300/1200/2400. Two lines, chat, files for all, email, matchmaker—all free. Sysop: Sysflyer. [Exp. #102.]

The Tower. (408)288-7651. 2400. Files, doors, msgs, 240MB HD, 545 CD. Free. Sysop: Dance Man. [Exp. #104.]

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415

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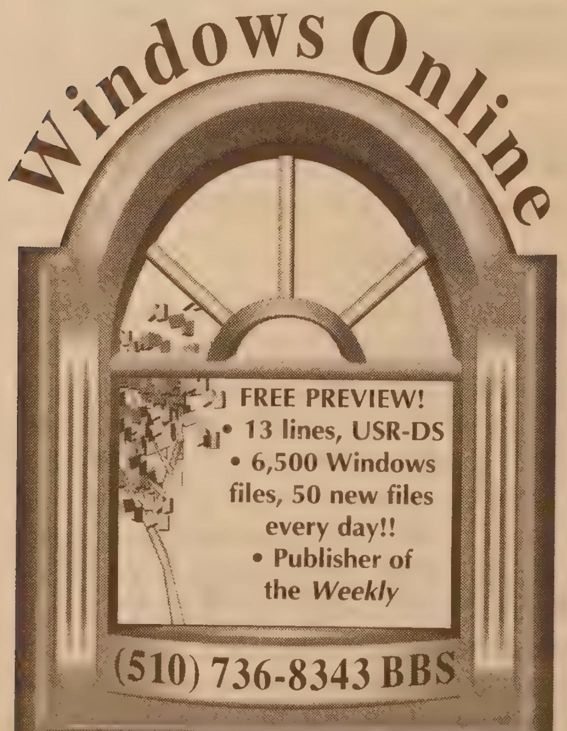

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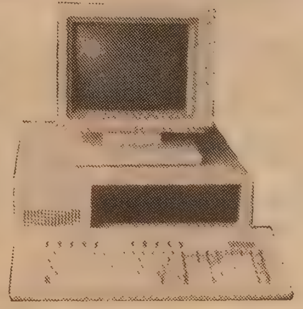

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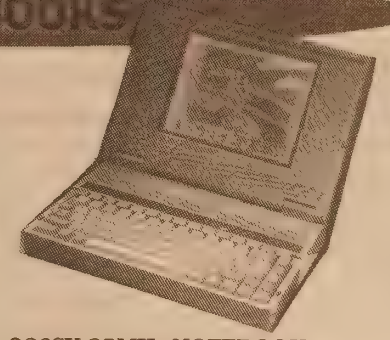

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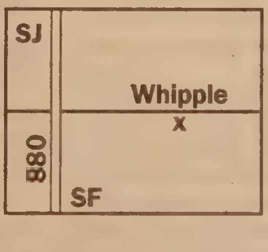

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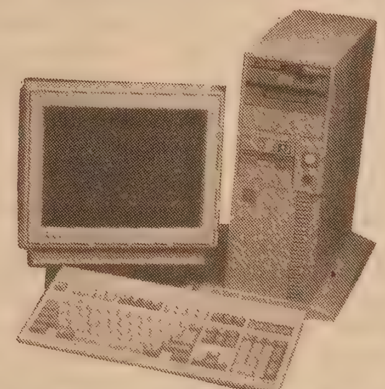

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BBSes

#102.]

California High-Flyers BBS. (510)568-9280. 8-N-1, 24 hrs., 300/1200/2400. More Bay Area numbers, nine lines, chat, email, library. Ages ten and up. Two subscription levels. Sysop: Carl Dominic. [Exp. #105.]

The Clubhouse BBS, Hayward Chapter. (510)889-1932. 24 hrs., 14,400. Genealogy, WordPerfect, Lotus, dBASE, and national echos. [Exp. #102.]

Delta BBS. (510)778-3714. 24 hrs., 1200/2400. 40+ online games, new every week, msg bases, transfer section w/out ratios. Free Sysop: Phantom. [Exp. #104.]

The Diamond Mind. (510)791-0832. 8-N-1, 24 hrs., 300/1200/2400/9600/14,400. Emotional support, IBM and Mac files, Fido echos, chat, online games, adult areas. Free user level. Sysop: Diamond. [Exp. #102.]

DVPCBBS. (510)943-6238. 8-N-1, 300–14,400. [Exp. #105.]

Easy Access BBS. (510)829-7627. San Ramon, Internet/Usenet/Smartnet, DOS and Windows. Subscription $4. Free access too. [Exp. #102.]

Francofolies. (510)651-3192. 1200/2400/9600. The French BBS of the Bay Area: online games, electronic newsletter, msg in French or English. No fee. Co-Sysop: MEJV. [Exp. #102.]

Fred Haney & Sons BBS. (510)792-5119. 8-N-1, 24 hrs., 2400. Software, Windows, etc., Fremont. Free. [Exp. #102.]

FrEdMail Snlndro. (510)895-1785. 1200/2400/9600. Educator/student network with Internet mail access, San Leandro HS, NorCal Hub. [Exp. #102.]

GMV-BBS. (510)294-9052. 24 hrs., 300/1200/2400. Multiline subscription BBS. Teleconference, private chat, email, SIGs, games, and file library for Amiga, IBM, Apple 8-bit, and Mac. Livermore. [Exp. #105.]

Gold Diggers BBS. (510)568-7807. 24 hrs., 2400–19,200. Messages and files, mostly IBM. Registration. Fees $10/yr. Sysop: Harry H. Goldberg. [Exp. #104.]

Grateful Med BBS. (510)689-0347. 8-N-1, 24 hrs., 1200/2400. Health professionals Fidonet/ADANet. Sysop: TC Dufresne. [Exp. #105.]

Hall Of Wisdom BBS. (510)540-6768. 24 hrs., 1200/2400/9600. Sciences, arts, history, engineering, and metaphysics. OS/2 support. [Exp. #102.]

IDC BBS. (510)865-7115, 814-8097. 8-N-1. Alameda, 200MB, 775+ conf areas, Qmail 4.0, PCBoard, ILink, RIME BizNet. Sysop: Mike King. [Exp. #102.]

IISME–Net. (510)643-6258. 300/1200/2400/9600. Initiatives for Science & Math Education, Lawrence Hall of Science, K–12net educator/student network with Internet mail access. [Exp. #102.]

The Job Xchange. (510)521-5931. 2400–14,400, 24 hrs. Computer industry jobs, resumes. TechNet. Free. [Exp. #102.]

Kanon Tech BBS. (510)235-6839. 8-N-1, 24 hrs., 300/1200/2400/9600/14,400. Huge C resource, echo mail, shareware. Commercial software/hardware well below retail. [Exp. #104.]

The Krypt BBS. (510)447-4623. 1200/2400/9600/14,400. Tons of multimedia and other subjects, GIFs, Win 3.x, midi, wav, SB/SBPro support. Sysop: Dcnovan sobrero. [Exp. #104.]

'Lectrick Blue. (510)376-3805, 798-7705, 525-5332. 8-N-1, 1200/2400/9600/14,400. Internet, Usenet, WWIV-Net, WWIV-Link, VBBS-Net, Fido, Adult-Net, Icenet, 100+ msg bases, games, and more. [Exp. #105.]

Linkages International. (510)547-2162. 8-N-1, 24 hrs., 300/1200/2400. News, science and technology, African and African American culture. [Exp. #105.]

The MAD Board. (510)893-7410, 465-3219. 14,400. Online games, TW2002, EC, GWar, and The Pit. Free, 90 min./day. [Exp. #105.]

Mutant Valley BBS. (510)294-9052. 24 hrs., 300/1200/2400. Multiline information exchange. [Exp. #102.]

Millennium BBS. (510)828-4153. 1200/2400. DOS shareware, games, and messages. Sysop: Terry Swiers. [Exp. #102.]

The Mines Of Moria. (510)559-9151. 1200. Role-playing games, msg bases, online games, TCH ANSI Group. [Exp. #104.]

The New-Ark BBS. (510)796-0947. 24 hrs., 300/1200/2400/9600. Games, Tradewar. Reg required. Sysop: Hiram Wolf. [Exp. #102.]

Night Creature BBS. (510)481-9774. 2400. Win and DOS files, TrueType shareware fonts, D/L first call. Free. Sysop: [Exp. #105.]

NightLine BBS. (510)234-1053. Home of Vetlink #22, nationwide veterans infor, supports echo conferences, over thirty veteran.military persons related conferences. Free. Sysop: Jon Mankowski. [Exp. #104.]

Off Broadway's AutoCAD BBS. (510)547-8801. 8-N-1, 300/1200/2400/9600. Dedicated to supporting AutoCAD. Message base free and non-members can download one file a day. Unlimited membership, $50/yr. Sysop: Robert Schutz. [Exp. #105.]

The Party Wherehouse BBS. (510)256-9809 (1200/2400), (510)256-8979 (9600). 8-N-1, 24 hrs. Eight networks, over 150 message bases. [Exp. #102.]

The Phantom Zone BBS. (510)538-9586. 8-N-1, 24 hrs., 300/1200/2400. Free access. Sysop: Paul Graydon. [Exp. #102.]

Quasatron BBS. (510)846-6085. 24 hrs., 9600 V.32. IBM, electronics, two-way & amateur radio, games, adult files, etc. Telecom industry professionals welcome. Reg not required. Sysop: KC Mazie. [Exp. #104.]

Rat Head Systems. (510)524-3649. 2400. Virtual gutter for digital derelicts. Instant access. NIRVANAnet. No fee. [Exp. #102.]

Records Dept. BBS. (510)426-0470. 8-N-1, 2400. Amiga, IBM, and Mac—files, chat, Fidonet. Extras for subscribers. Sysop: Paul Tibbals. [Exp. #102.]

The Road Not Taken. (510)848-5248. Active message bases, friendly, non-technical atmosphere. [Exp. #105.]

Sir James BBS W/ Magick Resource Center. (510)261-6567. 300–14,400. Magick, Pagan, SCA Music, Adult, MIDI, Music, Soundblaster, Windows, games. Reg req., free. Sysop: Sir James. [Exp. #102.]

Terminal One BBS. (510)432-2461. Soundblaster files, aviation and other GIFs, animation files. Wildcat 3.51, WWIV 4.21a. [Exp. #102.]

Testing 1,2,3...BBS. (510)373-0873. 24 hrs., 1200/2400/9600. IBM/Mac, messages, shareware files, nine lines. Livermore. Sysop: Corey L. Nelson. [Exp. #104.]

Tiger Team. (510)658-0607. Games, data encryption, PC Security and virus prevention. Firearms conference. Free. [Exp. #104.]

Trafalgar BBS. (510)735-3230. Online games, files, email, easy access. Autovalidation. Sysop: Lord Nelson. [Exp. #102.]

Vericomm BBS. (510)891-0303. 24 hrs., UFO's, conspiracies, occult, Phoenix liberator. Sysop: [Exp. #105.]

Viper 1 Premium BBS. (510)535-0231, 535-0315. 8-N-1, 24 hrs., 2400/9600/19,200. Multiline, 900MB, 1.3GB online, large adult file areas, games, file scanning facilities online. [Exp. #104.]

Windows Online. (510)736-8343. Over 6000 Win 3.x & 11,000 DPS files, 5GB, 13 lines using USR-DS modems. Free trial. [Exp. #105.]

Wishing Well BBS. (510)745-7901. 24 hrs., 300/1200/2400. Email, matchmaker, files, 100+ online games. Free. Sysopette: MaryLou White. [Exp. #104.]

World Conquest BBS. (510)689-4095. 24 hrs., Internationally known wargame, free trial game. Log game request w/sysop. Sysop: [Exp. #105.]

Worldview BBS. (510)676-2919. 8-N-1, 24 hrs., 1200–14,400. Reformed Christian perspective, files/discussion on philosophy, public policy. $49/yr. Sysop: Bill Gram-Reefer. [Exp. #102.]

707

The Black Rose. (707)557-6444. 24 hrs., 300/1200/2400. Commodore 64/128 BBS, running Image v1.2a and a NISSA Network Assoc. ANSI graphic menu, health msgs. Sysop: Captain Keelhaul. [Exp. #104.]

Dobbs Enterprises. (707)427-0277. 300/1200/2400/9600. Part of WIVInet conference. 24,000+ files. [Exp. #102.]

Recommended BBS. (707)448-2225. 24 hrs., 300/1200/2400. Multiuser games, teleconference, conversational and technical areas, 16 lines. All welcome. Sysop: Jay C. Parangalan. [Exp. #105.]

Sonoma Online. (707)545-0746. 60 echo-mail SIGs, UUCP email, 9K files, alt energy/home poser magazine. User supported, free. [Exp. #104.]

Threat Management Institute BBS. (707)935-1713. 8-N-1, 24 hrs., Conferences dealing with issues of personal defense, firearms, law, etc. Schedule of TMI Classes. No Fees. Sysop: Peter Alan Kasler. [Exp. #105.]

UNIX Online. (707)792-0402, 795-1721. 24 hrs., Usenet access. For UNIX, Amiga, Mac, and DOS users. [Exp. #102.]

User Friendly BBS. (707)645-8894. 8-N-1, 24 hrs., 9600. IBM/Amiga, NCNet, MCINet, msgs, sci-fi/fantasy info and reviews, doors. Sysop: Jim K. [Exp. #105.]

Virtual Reality. (707)539-6944. 6 pm–8 am, 300/1200/2400. Message bases, games, Amiga support. Sysop: Bryan Magers. [Exp. #105.]

ASSOCIATIONS

American Association For Artificial Intelligence (AAAI). Call: (415)328-3123. Email: membership@aaai.org. [Exp. #104.]

Association For Women In Computing. Meetings: 1st Wed., 5:30 pm; San Francisco. Call: (415)979-8450. [Exp. #107.]

The Association For Worldwide Software Support Management. Meetings: 2nd Tues., Milpitas Sheraton. Call: Mikael Blaisdell, (415)865-1323. [Exp. #105.]

Association Of Database Developers (ADD). Meetings: 2nd Thurs., 7:00 pm, The Gatehouse, Fort Mason Center, San Francisco. Organization for professional xBASE language systems developers. Membership $50/yr or $5/meeting. Call: JoAnn, (415)863-6706. [Exp. #102.]

The Black Data Processing Associates, Silicon Valley Chapter. Meetings: 4th Thurs., 6:30 pm, Amdahl Corp., Sunnyvale. Call: Doug Jones, (408)737-5999. [Exp. #105.]

Computer Professionals For Social Responsibility. Meetings: 2nd Wed., 7:30 pm, UC Berkeley, Evans Hall, Rm. 608-7. Call: Judy Stern, (510)643-7499. [Exp. #105.]

Data Processing Management Association. Call: (415)978-0868. [Exp. #105.]

IEEE Computer Society, San Francisco Chapter. Meetings: 3rd Wed. Call: (415)905-4400. [Exp. #103.]

Independent Computer Consultants Association, Northern California Chapter. Meetings are open to all. Only national trade assoc. comprising non-aligned working computer professional with in-the-trenches experience. Call: ICCA, (415)441-2948. [Exp. #102.]

International Network Of Women In Technology. Dedicated to significantly increasing the leadership of Women in Technology in industry and government. Call: Dr. Carolyn Turybfill, (415)336-1007. Email: CarolynTurybfill@Eng.Sun.

Continued

ASSOCIATIONS

COM. [Exp. #102.]

North Bay Systems Professionals. Meetings: 3rd Wed., 7:00 pm, Holiday Inn, Terra Linda, 1010 Northgate Dr., San Rafael. NBSP provides a forum and network for systems professionals. Call: Harry Chapman, (415)291-0174. [Exp. #102.]

Robotics Society Of America. Meetings: 2nd Mon., 8:00 pm, Exploratorium Library, San Francisco. Call: Brad Smallridge, (415)550-0588. [Exp. #106.]

Society For Technical Communication, Berkeley Chapter. Meetings: 2nd Wed., 6:00 pm, Yenching Restaurant, 2017 Shattuck Ave., Berkeley. Call: Rich Julius, (415)837-0397. [Exp #102.]

Society For Technical Communication, San Francisco Chapter. Meetings: 3rd Wed. Call: (415)985-7121. [Exp. #103.]

Software Entrepreneurs' Forum. 3rd Wed., 6:30 pm, Elk's Lodge, 4249 El Camono, Palo Alto. Industry association dedicated to software developers and entrepreneurs, offering information and education on all facets of the software industry. Call: Information, (415)854-7219; reservations, (415)965-9003. [Exp. #106.]

United Sysops Association. Meetings: 2nd Wed., 7:00 pm, Coco's, 1035 S. Mary Ave., Sunnyvale. Organization of bulletin board sysops and users. Call: Bill Strouse, (408)739-9081. BBS: (408)739-8753. [Exp. #105.]

USER GROUPS

ACCOUNTMATE

AccountMate User Group. Meetings: 3rd Tues., 7:00 pm, S. Branch Berkeley Library, 1901 Russell St. Call: Joshua, 1-800-310-0262. [Exp. #104.]

ACCOUNTING SOFTWARE

Computer Associates User Group. Meetings: 1st month of quarter on 3rd Wednesdays. Holiday Inn, 1500 Van Ness. Come share ideas and information with other local users of Computer Associates Accounting Software! Call: Beth E. Markus, (415)864-6770. [Exp. #102.]

AMIGA

3rd Dimension—Imagine/Lightwave User Group. Meetings: 1st & 3rd Mon., Computer Showcase, 2739 Geary Blvd., SF. Call: Ollie, (415)863-8792. [Exp. #102.]

AAA—Amiga Addicts Anonymous. Meetings: 3rd Tues., Concord Water District Bldg., 1311 Concord Ave. Classes, BBS, pub. dom. disks, info line. Call: (510)935-0829. [Exp. #106.]

ACCESS—Amiga & Commodore Computer Enthusiasts Society. Meetings: 2nd Thurs., 7:00 pm, Livermore Airport Terminal. Call: Paul, (510)829-6053. [Exp. #102.]

Amiga User Group—Germany. German Amiga user group is seeking contacts in the US. Contact: Nils Wietelmann, Unter den Heestern 28, W-2839 Kirchdorf, Germany. [Exp. #102.]

AUM—Amiga Users Of Marin. Meetings: 3rd Wed., 7:30 pm, College of Marin Science Center, Rm. 190. Beginners class at 6:00 pm. Call: (415)456-1411. BBS: (415)485-5895. [Exp. #105.]

AWEST Amiga Users. Meetings: 1st Wed., 7:00 pm, Computer Showcase, 2739 Geary, SF. Call: (415)584-8406. [Exp. #103.]

AWEST Amiga Users. Meetings: 1st Thurs., 7:00 pm, Laguna Honda School, Conference Rm., 1350 7th Ave., San Francisco. Call: (415)584-8406. [Exp. #106.]

FAUG—First Amiga User Group. Meetings: 1st Tues., 7:30 pm, HT Electronics, 275 N. Matilda Ave., Sunnyvale. Q &A, new product demos, public domain software. Call: Mike Fisher, (415)855-9426; BBS: (415)595-2479; Usenet: mike@hpspd.hp.com. [Exp. #106.]

Redwood Empire Amiga. Meetings: 3rd Tues., 7:30 pm, Santa Rosa Plaza, Community Room. SIGs meet throughout month. Call: (707)523-9978. BBS: (707)795-2717. [Exp. #104.]

TOGA—The Other Group Of Amigoids. Meetings: Varying Sat., 12:30 pm, Milpitas Library, 40 N. Milpitas Blvd. Call: Lawrence Brown, (408)984-6036. [Exp. #104.]

APPLE

Tri-Valley Apple II User Group. Meetings: 1st Wed., 7:00 pm, Glendale Federal Bank, 3101 Crow Canyon Place, San Ramon. Come and learn more about your computer. Support II+, IIc, IIe, IIgs. Call: (510)828-0959. [Exp. #105.]

AT&T

AT&T Computer User Group, North Bay. Meetings: 1st Wed., general discussion at 6:00 pm, meeting begins at 7:00 pm, San Francisco AT&T Bldg., 50 Fremont St. MS-DOS and UNIX. Call: Jim Lansing, (415)885-6631 or Joe Mahoney, (415)584-6510; BBS (415)829-6027. [Exp. #106.]

AT&T Computer User Group, South Bay. Meetings: 3rd Wed., general discussion at 6:30 pm, meeting begins at 7:00 pm, location varies. MS-DOS. Call: Barbara Kievlan, (408)371-0215. [Exp. #106.]

AT&T UNIX Computer User Group, South Bay. Meetings: 4th Wed., program begins at 7:00 pm, location varies. Call: Thad Floryan, (408)985-7100; USENET,thad@cup.portal.com. [Exp. #106.]

ATARI

ABACUS (Atari Bay Area Users Society). Meetings: 1st Sat. San Francisco. Call: (415)469-7924. [Exp. #102.]

BAAUG (Bay Area Atari Users Group). Meetings: 1st Mon., 7:00 pm, Agnews Aud., Santa Clara. Call: Andres Barbiero, (408)9803-9787. BBS: (408)986-0215. [Exp. #107.]

BASIC

SF Bay Area Visual BASIC User Group. Call: Gustavo Eydelteyn, (510)547-7295. [Exp. #104.]

CAD/CAM

SF Bay Area AutoCAD/DCA Software User Group. Meetings: 3rd Wed., 6:30 pm. All CAD users welcome. Call: Michael Foley, (510)734-0707. [Exp. #103.]

COMMODORE

ACCESS—Amiga & Commodore Computer Enthusiasts Society. Meetings: 2nd Thurs., 7:00 pm, Livermore Airport Terminal. Call: Paul, (510)829-6053. [Exp. #102.]

CAVE—Commodore Amiga Video Enthusiasts. Meetings: Every other Sat., 8:00 pm, 304 Springs St., Old Suisun. Call: Ron, (707)421-2283. [Exp. #102.]

CONTACT MANAGEMENT

Bay Area TeleMagic User Group. Meetings: 2nd Wed., 4:00 pm. Call: George Workman, (408)476-6385. [Exp. #106.]

CP/M

San Francisco Computer Society. Meetings: 7:00 pm, Laguna Honda School, 1350 7th Ave., San Francisco. Call: Ralph Gallegher, (415)929-0252. [Exp. #102.]

DESKTOP PUBLISHING

Bay Area Desktop Publishing User Group. Meetings 1st Wed., 7:00 pm, Nisha Software, 2493 Telegraph Ave., Berkeley. Topics include editing and publishing as a career. Call: (510)848-8200. [Exp. #103.]

Golden Gate Computer Society DTP SIG. Meetings: 3rd Thurs., 7:00 pm, Conference Room, Bay Area Training facilities, 4340 Redwood Highway, Suite 138-F, San Rafael. Call: (415)485-1871. [Exp. #105.]

San Mateo County Ventura Publisher User Group. Meetings: 3rd Mon., 6:45 pm, San Mateo ROP, 1800 Rollins Rd., Rm. 14, Burlingame. Call: Elinor Cruze, (415)366-5317. [Exp. #106.]

FREEDOM, PRIVACY, AND TECHNOLOGY

BMUG SIG On Freedom, Privacy, And Technology. Meetings: Last Sun., 2:00 pm, BMUG office, 2055 Center St., Berkeley. Call: Judi Clark, (510)549-2684. [Exp. #104.]

IBM AND COMPATIBLES

Alameda Computer User Group. Meetings: 2nd Wed., 7:30 pm, Social Hall, Temple Israel, Island Dr. and Mecartney Rd. Providing an informal forum for both Macintosh and PC users to explore questions about hardware and software. Call: (510)523-1139. [Exp. #106.]

Delta PC Users Group. Meetings: 3rd Sat., 10:00 am. Call: (510)427-2255, ext. 744. [Exp. #102.]

DVPC—Diablo Valley User Group. Meetings: 1st Thurs., 7:30 pm, Bank of America, Bldg. B, Clayton Rd. at Galindo, Walnut Creek. SIGs include WordPerfect, Windows, Paradox, Beginner's, Visual Basic, education/entertainment, and new users. Call: (510)943-1367. [Exp. #106.]

EastBay FOG. Meetings: 2nd Wed., 7:30 pm, Episcopal Church of St. John-in-Montclair, 1707 Gouldin Rd., Montclair. All microcomputers, MS-DOS, CP/M. Call: (510)653-2627. [Exp. #105.]

Golden Gate Computer Society (GGCS). Meetings: 4th Mon. 6:45 pm, San Rafael Community Center. Free intro to computers class at 6:00 pm. Call: (415)927-2909. [Exp. #106.]

IBM Technical SIG. Meetings: 2nd Thurs., 7:00 pm, Cubberley Community Center, 4000 Middlefield Rd., Rm. H-1, Palo Alto. Sponsored by Software Entrepreneurs' Forum. Call:Peter Harris, (415)329-1880. [Exp. #106.]

Micromate–CP/M–DOS Users Group. Meetings: 1st Thurs., 7:30 pm, Eclectic computer buffs. Chabot Observatory, 4917 Mountain Blvd., Oakland. Call: Ed Miller, (510)376-1611. [Exp. #105.]

PC BasicS: Silicon Valley Computer Society SIG. Meetings: 3rd Mon., 7:30 pm, 847 W. Maude Ave., Sunnyvale. Talks presented by Rich Wingerter of Zip Consulting & Design. Call: (415)326-2435. [Exp. #102.]

Peninsula Computer Club. Meetings: 2nd Thurs., 7:30 pm, Social Room, 222 Laurel St., San Carlos. DOS and CP/M libraries. Call: Larry Welling, (415)593-9981. BBS (415)571-9259. [Exp. #104.]

San Francisco Business Computers. Meetings: 4th Tues., 5:30 pm. For those who use computers in business. Visitors $5. Call: (415)788-5338. [Exp. #106.]

San Francisco PC Users Group. Meetings: 3rd Tues., 6:15 pm, Conference Center, Bldg. A, Fort Mason. Call: (415)979-5879. [Exp. #105.]

South Bay WordPerfect User Group. Meetings: Dates vary, Saratoga Community Libraty. Free. Call: Martin Van Derpool, (408)238-8434. [Exp.

#106.]

Stanford/Palo Alto PC User Group. Meetings: Last Wed., Turing Aud., Stanford. DOS/Windows. Call: (415)329-8252. [Exp. #103.]

KNOWLEDGEMAN

Bay Area KnowledgeMan (And Guru) User Group. Meetings: 1st Tues., 6:30 pm., JNZ, Inc., 826 Las Trampas Rd., Lafayette. A forum for discussion and info concerning mdbs products, esp. KnowledgeMan and Guru. Call: (510)947-4878. [Exp. #102.]

LAPTOPS

HPX HP Laptops & Handhelds. Meetings: 2nd Sat., 10:30 am, Sunnyvale. Call: Michael Felsenstein, (415)564-8279. [Exp. #102.]

LEGAL

SF Bar Assoc. WordPerfect User Group. Meetings: 3rd Wed., noon, Brown bag meetings. SF Bar Assoc. Boardroom, 7th Fl., 685 Market St. Call: (415)421-5650. [Exp. #106.]

MACINTOSH

A32 Macintosh User Group. Meetings: 2nd Sat., 10:00 am, GTE Bldg 3 Cafeteria, 100 Ferguson Dr., Mountain View. Call: (408)263-0398. [Exp. #106.]

BMUG—Berkeley Macintosh User Group. Meetings: Every Thurs., 6:00 pm, Physical Sciences Lecture Hall, UC Berkeley Campus. Call: (510)549-BMUG. [Exp. #105.]

BMUG West. Meetings: Last Mon., 6:30 pm, San Francisco Exploratorium. Call: (510)549-BMUG. [Exp. #105.]

Diablo Valley Macintosh User Group (DVMUG). Meetings: 3rd Tues., 7:00 pm, St. Mark's Lutheran Church, 3051 Putnam Blvd., Pleasant Hill. Meet Mac users, learn about our SIGs. Call: (510)939-2141. [Exp. #106.]

International Macintosh User Group (IMUG). Meetings: 3rd Thurs., 6:45 pm, location varies. A forum for multilingual computing. Call: Roger Sherman, (415)859-5146. [Exp. #105.]

Let's Go Macintosh Computer Society. Meetings: 3rd Thurs., 7:00 pm, Skyline Jr. College, Media Center, Rm. 2105, San Bruno. See and try interesting new products, meet other Mac users, hear guest speakers. Call: Fidel Cajulao, (415)221-2995, or Nolan Apostle, (510)947-2523. [Exp. #103.]

Macintosh SIG. Meetings: 3rd Tues., 7:00 pm, Apple Cafeteria, City Center 4, De Anza and Rodrigues, Cupertino. Sponsored by Software Entrepreneurs' Forum. Call: Jeff Cherniss, (408)999-2524. [Exp. #104.]

Macintosh SIG Of Programming And Interfacing Enthusiasts. Meetings: 2nd Thurs., Lynbrook High School, Rm. 33. Call: George Ingalls, (408)243-0234. Write: PO Box 2185, Santa Clara, CA 95055. [Exp. #105.]

Macs Of Marin. Meetings: 2nd Thurs., 7:00 pm, Redwood High School, Larkspur. Marin County Mac User Group for all levels of expertise, beginners welcome, SIGs. [Exp. #102.]

SPC Apple User Group. Meetings: 2nd Wed., 7:30 pm, Fremont Main Public Library. The Society for Prevention of Cruelty to Apple Computers Users Group supports all Apple and Macintosh computers. Call: Jim Weil, (415)796-7169. [Exp. #105.]

MULTIMEDIA

BMUG Multimedia SIG. Meetings: 2nd Mon., 6:00 pm, Call: (510)549-BMUG. [Exp. #106.]

International Interactive Communications Society—IICS. Meetings: 2nd Tues., 7:00 pm, alternate locations San Francisco and south bay. For people involved or interested in developing and using interactive multimedia technologies. Call: IICS Hotline, (415)328-7318. [Exp. #106.]

Macromedia User Forum. Meetings: 1st Wed., 600 Townsend, at 7th St., San Francisco. Meet fellow professionals, preview products, get questions answered. Call: John Dowdell, (415)665-3916 (days); Email: jdowdell@aol.com. [Exp. #106.]

Multimedia SIG. Meetings: 1st Thurs., 7:00 pm, Cubberley Community Center, 4000 Middlefield Rd., Palo Alto, Rm. H-1. SIG of Software Entrepreneurs' Forum. Call: Valerie Taylor, (415)424-9051. [Exp. #104.]

Multimedia User Group. Meetings: 1st Wed., 7:00 pm, 600 Townsend St., 1st Fl., San Francisco. A forum to learn about the multimedia industry, get your questions answered, and meet with fellow professionals. Sponsored in part by Proxima and Mitsubishi. [Exp. #102.]

NETWORKING

NetSIG. Meetings: 4th Tues., 7:00 pm, Novell Sunnyvale. Networking SIG for Software Developers. SEF group. Call: Skip Addison, (408)277-5867. [Exp. #105.]

NEXT

BANG—Bay Area NeXT Group. Meetings: 3rd Wed., 7:00 pm, Terman Aud., Stanford. Presentations and lectures. Call: (415)327-BANG. Email: info@BANG.org. [Exp. #102.]

Berkeley NeXT Users Group. Meetings: 2nd Tues., 7:00 pm, 2055 Center St., Berkeley. Call: Bernt Wahl, (510)644-0139. [Exp. #105.]

NOVELL

Silicon Valley Novell User Group. Meetings: 3rd Wed., 6:30 pm, Coco's, 1305 S. Mary Ave., Sunnyvale. Call: Bill Strouse, (408)739-9081. BBS: (408)739-8753. [Exp. #106.]

OMNIS 7

GUIdata Bay Area Omnis 7 User Group. Meetings: 1st Mon. Newsletter, forum for all users. Call: Peter Bennett, (510)935-5203. [Exp. #102.]

OS/2

OS/2 Bay Area User Group. Meetings: 4th Mon., 7:00 pm. For anyone interested in OS/2. Presentations, product demos, questions and answers. Call: (415)755-3124. [Exp. #106.]

OS/2 SIG Of San Francisco. Meetings: 2nd Wed., 7:00 pm, location varies. Call: Margery Blum, (415)931-3110. [Exp. #106.]

PEN COMPUTING

Pen Systems SIG. Meetings: 4th Wed., 7:00 pm, Cubberley Community Center, Rm. H-1, 400 Middlefield Rd., Palo Alto. SIG of Software Entrepreneurs' Forum. Addresses all issues of interest for developers of pen computing software. Call: Bill McApline, (415)348-2257 or SEF at (415)854-7219. [Exp. #105.]

PROGRAMMING LANGUAGES

C/C++ Programmers Network. Write: Rick Rowe, 3245 S. White Rd., Suite 106, San Jose, CA 95148-4056. Email: rown@netcom.com.

Forth Interest Group Of North Bay. Meetings: 2nd Sat., 1:00 pm, 2055 Center St., Berkeley. Call: Leonard Morgenstern, (510)376-5241.

PROJECT MANAGEMENT

Microsoft Project User Group. Meetings: 3rd Mon., 6:30 pm, TEK/LINK Corp., 2901 Tasman Dr., Suite 207, Santa Clara. Project management solutions with Microsoft Project software—both PC and Mac. Call: Henry Viveiros, (408)293-5201. [Exp. #105.]

Q&A

East Bay Q&A User Group. Meetings: 4th Tues., 7:00 pm, San Leandro. Developing and expanding the many uses of Q&A database/word processor program by Symantec. Call: Philip Edwards, (510)635-1997. [Exp. #106.]

West Bay Q&A User Group. Meetings: 2nd Tues., 7:00 pm, Redwood City. Developing and expanding the many uses of Q&A database/word processor program by Symantec. Call: Philip Edwards, (510)635-1997. [Exp. #106.]

SQL

SQL_Forum/Bay Area SQL Database Server User Group. Meetings: Once a month in downtown SF. Oracle, SQL Server, SQLBase, and more. Call: Robert Gentry, DBBS, Inc. (415)583-3000. [Exp. #102.]

TELECOMMUNICATIONS

BMUG Telecom SIG. Meetings: Last Wed., 8:00 pm. How to use your modem, terminal programs, and the BMUG BBS. Call: (510)549-BMUG. [Exp. #105.]

SDL Interest Group. Meetings: 1st Thurs., 5:00 pm, Anonymin, 50 University Ave., Los Gatos. To discuss and exchange ideas on SDL, the CCITT z.100 standard for telecommunications description and design. Call: Malou Zanni, (408)399-5030. [Exp. #103.]

TEXAS INSTRUMENTS

Santa Clara Valley TIPC Group. Meetings: 4th Thurs., 7:00 pm, Magnolia Inn, 176 S. Bernardo, Sunnyvale. Newsletter, library. Call: Ralph, (510)526-2492. [Exp. #106.]

TI-99/4A. Meetings: 2nd Sat., Oakland. Call: Fred, (510)530-8335. [Exp. #102.]

THEOS

Theos User Group. Call: (510)785-7355. [Exp. #106.]

UNIX/XENIX

N. Cal UNIX Users. UNIX user group now forming: AT&T UNIX, Coherent, SCO UNIX/XENIX, and LINUX. Write: Just Computers, PO Box 355, Cotati, CA 94931. [Exp. #105.]

UNIX SIG. Meetings: 2nd Tues., DEC, 800 W. El Camino Real, Mountain View. Sponsored by Software Entrepreneurs' Forum. Call: Priscilla Rowe, (415)776-0513. [Exp. #106.]

VIDEO TOASTER

Video Toaster User Group. Meetings: Last Thurs., 7:30 pm, HT Electronics, 275 N. Mathilda Ave., Sunnyvale. Special guests, equipment demos, hands-on workshops, plus info/tips on new System 2.0. $4 for non-members. Call: Andrew Timmins, (408)243-9233 (eve). [Exp. #104.]

WINDOWS

BMUG Windows Programmers SIG. Meetings: 1st Tues., 6:30 pm, 2055 Center St., Berkeley. The Programmers SIG is a forum for Windows programmers of all levels to meet and exchange information. Call: Ferdinand Rios, (510)526-3031. [Exp. #106.]

WinSIG. Meetings: 1st Wed., 6:30 pm, Cubberley Community Center, Rm. H-1, 4000 Middlefield Rd., Palo Alto. Windows SIG of the Software Entrepreneurs' Forum. Call: Fran Finnegan, (415)288-4400. [Exp. #105.]

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BREAKING BAY BBS

Breaking Bay BBS is dedicated to the sport of SCUBA and free diving and carries SCUBANET message areas, including schedules of activities, discussions of good/bad gear, find a dive buddy, clubs, and water sports equipment for sale. The files section contains dive-related material. (415/566-0385, 2400 baud, 8-N-1, Charlie and Karen Eng, sysops.)

NIGHTLINE BBS

NightLine BBS is a veterans' interest BBS, carrying an extensive array of VETLINK echo areas such as veteran's advocacy, reunions, wartime experiences, Vietnam veterans, find other vets. Non-veterans are welcome. (510/234-1053, 2400 baud, 8-N-1, Jon Mankowski, sysop.)

OAKLAND PUBLIC LIBRARY CARD CATALOG

Oakland residents, did you know your public library's card catalog is online? (510/238-2253, 2400 baud, 8-N-1.) Set your communications software for VT 100 emulation. On connect, return, and at the logon prompt type OAKLAND (all caps).

There are several options for searching titles, authors, and subjects, and once you select a book for more information, its physical location within the library system, library section, and current status (in or out) are also displayed. This is a quick and painless way to start research, or just see if your local branch has the latest best-seller on the shelf.

GUIDEBOARD BBS

Guideboard BBS is "a combination of Cabbie's Guide to San Francisco and consumer bulletin board—a potpourri of information on where to go for what." Sysop Richard Schwartz is a cabbie who shares information gained on the job and asks callers to contribute their best San Francisco tips, such as "best San Francisco restaurant" to the information base. (415/864-3858, 2400 baud, 8-N-1.)

DRY BONES BBS

Dry Bones BBS (formerly Nightingale BBS) is a NurseNet International communications system, with an extensive menu system—underneath every menu selection is another surprise. This BBS is wide-ranging in the topic material of its files and echo areas, and although dedicated to the practice of nursing, it includes self-care information for consumers and is open to all. (415/292-7314, 2400 baud, 8-N-1, Jim Rankin, R.N., sysop.)

Is Your Listing Missing?

Free user group and association listings are limited to the group's name and a ten-word description, including the mailing address and contact phone number. They will be **deleted at six-month intervals** to ensure timeliness and accuracy of information. **Free BBS listings** are also limited to the board's name, sysop's name, and a ten-word description including parameters, baud rate, phone number, and registration fee. Because we have an ongoing problem of boards shutting down without telling us, much to the annoyance of would-be callers and the new phone number's owner alike, we will **delete these listings after they've run three months.**

You can update or renew your listings at any time. If yours is missing, send us a new one! Send your listing information to: US Mail should go to: MicroTimes User Group, 3470 Buskirk Ave., Pleasant Hill, CA 94523. **Faxes** are welcome at (510)934-2417 or (213)467-5486. **Email** can be sent to: microx@well.sf.ca.us. Or MCI:MICROTIMES.

RESOURCES

Continued from page 240

Calendar Of Events continued

Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

December 12 How To Build Your Own 386 Or 486 PC Computer Class. Martinez. Martinez Adult School. Call: (510)228-3276.

December 12 & 19 PC Repair Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

December 14 FileMaker Pro 2.0 Intro Class. San Francisco. The Microcomputer Training Company. Call: 1-800-999-9654.

December 14 Intermediate Paradox 3.5/4.0 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

December 14 Intro To Networks Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

December 14–15 Q&A: Database/Word Processing Software Workshop. San Francisco. Symantec Training Group. Call: 1-800-786-8620.

December 14–21 Intermediate PhotoShop Class. San Francisco. Center for Electronic Art. Call: (415)956-6500.

December 16 Build & Upgrade An IBM PC Clone Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

December 17 Accounting Systems Seminar: Tax And Managerial Reporting. Oakland. David Simon, CPA. Call: (510)893-5753.

December 17 Advanced FoxPro 2.0 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

December 17–18 PC Repair Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

December 18 Advanced Paradox 3.5/4.0 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

December 18 Intro To WordPerfect For Windows 5.1 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

December 18 Macintosh PowerBook Class. San Francisco. The Microcomputer Training Company. Call: 1-800-999-9654.

December 21 Approach For Windows Class. Walnut Creek. The Microcomputer Training Company. Call: 1-800-999-9654.

December 22 Harvard Graphics Class. Walnut Creek. The Microcomputer Training Company. Call: 1-800-999-9654.

December 22 Persuasion 2.1 Class. San Francisco. The Microcomputer Training Company. Call: 1-800-999-9654.

December 23 PC PageMaker Class. San Francisco. The Microcomputer Training Company. Call: 1-800-999-9654.

December 26 DeltaGraph Professional Class. Walnut Creek. The Microcomputer Training Company. Call: 1-800-999-9654.

December 28 FileMaker Pro For Windows Class. San Francisco. The Microcomputer Training Company. Call: 1-800-999-9654.

December 28 Intro To Networks Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

December 29 Excel 4.0 Intermediate Class. Walnut Creek. The Microcomputer Training Company. Call: 1-800-999-9654.

December 29 Paradox 4.0 Intro Class. San Francisco. The Microcomputer Training Company. Call: 1-800-999-9654.

December 29 Quattro Pro Intro Class. Walnut Creek. The Microcomputer Training Company. Call: 1-800-999-9654.

December 30 Approach For Windows Class. San Francisco. The Microcomputer Training Company. Call: 1-800-999-9654.

December 30 Build & Upgrade An IBM PC Clone Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040. ■

Continued from page 116

sort out. What can be done? How do you see Kaleida's role in this?

Assuming that it's possible to solve the issue of a common platform that plays multimedia well enough to give people an experience roughly equivalent to an afternoon sitcom, we then need to explore the ways in which intellectual property can be purveyed.

So that one might own that sitcom.

So that one might own the sitcom, exactly. And this is, of course, the thorniest of all issues associated with the advent, not only of multimedia, but of the digital age altogether.

So thorny that almost nobody's talking about it.

This issue certainly transcends the relatively simple issue of how to have specific pieces of information on a CD. Because that's a quantifiable issue—everybody can go out and figure out who they can go to and who they can buy the stuff from for a one-time right use. It's a pain, but it's certainly doable.

The bigger question is what happens when we're all linked up through some sort of as-yet-unknown bandwidth provider. When all of us are able to access everything that's ever been created, and on top of that, when a lot of people feel their role in life is to take pieces of things that other people have created and reassemble them in new forms and redistribute them under their own mark...

That may in fact be their role in life, since it seems that's how human knowledge has proceeded so far.

This is not a criticism. In fact, it's a prediction. I think this is going to happen. I absolutely think it's going to happen, and I think it's wonderful.

This is something very basic.

It's very basic. And what the hell else are we going to do in this country, since we can't build things any more? We will be giving each other information. We will be service providers to each other, and to the rest of the world, and a few people will still be out there tilling the land, thank God, but it will become increasingly mechanized and there'll be a very small component of our gross national product which is product already. It will all be fancy, entertaining, and hopefully important information services. Or other forms of services. And most of those will be provided digitally, in my opinion.

What the answer is now, I don't exactly know. But it is relatively clear that early on somebody is going to have to come up with a mechanism that radically changes the way in which the copyright laws are applied, basically. Or, de facto, change the way the copyright laws are applied, by virtue of the creation of an economic system that justifies authors giving up some of their rights with respect to copyright.

Actually if you asked me which is most likely to happen, I would certainly say the latter. I do not believe that we're likely to make major *sui generis* copyright modifications to support a digital age, at least not in the near future.

It would be better if we didn't.

It would be better if we didn't because we'll get it wrong. At least we'd get it wrong for a while.

But I definitely think that authors can be persuaded that they can make tons of money by providing people the ability to republish their information, their works, their owned titles, their great acts of creativity, in different forms.

More authors need to have the experience that I've had, which is having their work distributed and having it increase, rather than decrease, in value. But if you haven't had that experience...

I thought for a moment you wanted them all to have the experience of cattle ranching.

[laughs] No. That would be really nice if that could happen, but I don't think it's a viable option. Certainly wasn't a viable option for me!

No, I agree. It is the promise of that sort of world, I think, that will bring about the ability to create that kind of world.

Again, the fascinating thing that strikes me again and again and again is that the principal role that Kaleida can play is as a kind of nucleus around which these industries can coalesce. There's no other way to describe it. We're not simply a catalyst, because we want to be a participant—I guess a catalyst participates in some portion of the reaction, but we still want to be around!

Maybe a better metaphor is you want to be the seed crystal in the supersaturated solution.

That's right. We want to be the seed in the supersaturated solution. We want to be at the center of that crystal.

You've got a pretty good shot at that, I would say.

Fleetness of foot again becomes the central ingredient to a successful Kaleida. I recall a moment—this was prior to my being hired—my board of directors and Sculley were sitting in a room at Apple, and they asked me, "What is the single central critical issue that will make Kaleida successful?" And I thought about it for a while, and I said, "It's fleetness of foot. It's that more than any other single component."

Guerrilla versatility.

Guerrilla versatility. Thank you. That's a nice word.

Which gets tricky if you're a light little dog with two great big tails.

[*laughs*] Well, somehow we have to get them both wagging in opposite but equal directions and cancel each other out!

It's the stationary sausage syndrome.

Right. Well, you said something when you were talking about intellectual property a moment ago, about getting things on the Net. How do you see Kaleida's role in the larger political arena, as regards opening the architecture of the net? You will have a fair amount of credibility in areas that count, such as the FCC and other regulatory bodies. Do you think Kaleida has a business interest in trying to hasten, say, the deployment of ISDN?

This is a very self-serving question. The answer is that we will of course completely turn ourselves over to the Electronic Frontier Foundation for all direction and guidance, because clearly they've thought it through and we haven't! [*laughter*] And of course be copious in our donations as well!

Excellent! Good news!

That's why this is such a good interview! [*laughter*] Ah yes, where was I?

The more accurate answer—although what I say about EFF is true of course—the longer-term answer is that it's unclear how, ultimately, these bandwidth pipes are going to be deployed to the end-user, to the home. We have no idea if it's going to be some super-unbelievable NREN or whether it will be your local cable company, which, parenthetically, also provides you with video dialtone, or whether it's going to be an enlightened phone company that really puts fiber into the house.

Or some polyglot combination of the above, and other things we haven't thought of yet.

Right. We don't know. See, we want to be active in assisting anybody who sees the vision of bringing broad bandwidth to the home, and we will be active in the following sense. We will try to find material to push through those systems that hopefully will bear some of the characters of enlightenment of which we spoke earlier.

All right...

[*laughs*] I *knew* you would do that!

Let's get to the characters of enlightenment we spoke of earlier.

This is a hard one.

It is a hard one, but I think it's one that we always need to be coming back to. How does it serve humanity to leave the physical world and move into a completely infomated environment? How do we benefit from this?

This is probably exactly the same thing that the people who were standing around Gutenberg's house said. "What's going to happen now that everybody can read, and no longer goes out and tills the soil?"

The answer is, I hope, good things. And good things of the sort of empowering—you know, I'll tell you, I think this may be my Berkeley bent, but one of the most valuable things that will emerge from this digital age, it seems to me, is the decentralization of the information infrastructure of publishing. Each individual will actually be able to be a movie studio, a textbook publisher, a scientific journal publisher, a newsletter publisher, a newspaper publisher, a fiction publisher, a fact publisher. We'll all be empowered to do that with nothing more than a handicam, a VCR, a TV set, and the Net, however that Net is constructed.

Right, moving from a one-to-many distribution model to a many-to-many model.

And I think that this decentralization, this popular usurpation of a power which currently is held by relatively few, is absolutely the most socially transforming event that I can conceive.

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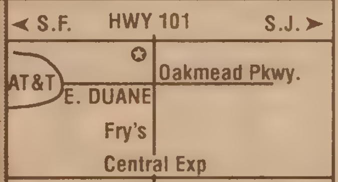

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There's traditionally been an awful lot of economic centralization in broadcasting and publishing.

Well, these things all required enormous infrastructure previously. The movie studios required the ownership of movie theaters and the ownership of patents on sprockets and collaboration with the film manufacturers, and sound stages and cameras and a host of actors who were signed indelibly and irrevocably to the studio.

That will just plain old go away. A handicam, a VCR, and a pipeline to the Net. That's all you're going to need.

And hopefully you're going to need Script X. [*laughs*]

But then there arises another problem, and it's one which no one has an angle on solving...Datashock. One of the good things that these central providers did was to edit the torrent of reality down to what seemed generally useful and important.

Oh, I agree.

Already I'm seeing Datashock—connection crashes—everywhere I look in this society. There are too many points of view accessible to everybody all of a sudden. It's all white noise.

Right.

What do you think is going to be the ultimate solution to that?

The answer is that people will never buy things on a totally unedited basis. A new class of people will emerge whose job it is to review certain categories of stuff that's being provided into this great data mass, and filter out the gems, and redistribute them. The people who do that well, presumably, will make a lot of money. They're going to be the conceptual equivalent of today's editors of *Time* Magazine or of CNN.

Or perhaps more like Esther Dyson.

Or Esther Dyson.

People who have newsletters that are specific in their readership and content.

But I think Esther Dyson continues just absolutely unmodified. The only change in Esther Dyson's stuff is that all of a sudden it's coming over your pipeline instead of on paper, but that's no big deal.

The interesting question is Joe Schmoe, who has never tried to publish anything before, who goes out with a handicam and makes a pretty interesting fifteen-minute short on what's going on in his or her—I guess it would be Jane Schmoe in that case—in his or her neck of the woods, and puts that onto the Net. And the local newspaper-editor-conceptual-equivalent is the one who looks at that and says, "Gee, that was pretty good. I think I'll recommend that people watch this as part of the recommended list of things to watch today." And if I happen to subscribe to that particular editor, that's what I'll watch.

Now, you can envision a reamalgamation of power around editorial prowess and acceptability. I think that's inevitable. But I think it will be much more subject to the genuine services provided by those individuals. It will be, in a sense, much more democratic, because people will be able to change editor to editor far more easily than today. Today they're able to change subscriptions from *Time* to *Newsweek*.

I suppose this is going to have a profound effect on the way we view things economically.

Oh, I think this is—again, I hearken back to my Berkeley roots—this is the most mischievous thing that I can imagine pulling off. It is absolutely mind-bogglingly mischievous, because it affects virtually all of the power centers and all of the economic centers in this country today, period. And if it's done right, it has a remarkably democratizing effect, a remarkably empowering effect, on people who are fundamentally disenfranchised right now, for whatever reason. And you know, it does everything from Head Start to jewelry sales, all in the same box and within the same sort of general framework mechanism. It's pretty remarkable what we can pull off in the digital world.

My genuine hope is that Kaleida can do two things: hasten it, and direct it so it's just a little bit better than it would have been if Kaleida had not existed. If I achieve those two things, I'm a fulfilled man.

Well, you've got a shot at it.

So, to go back to your first question, that's why I took the job.

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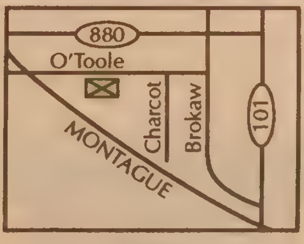

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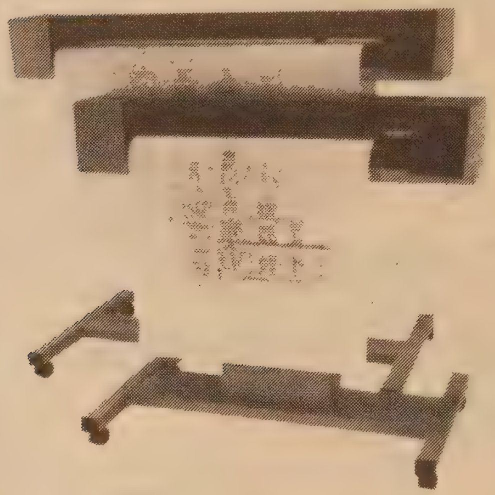

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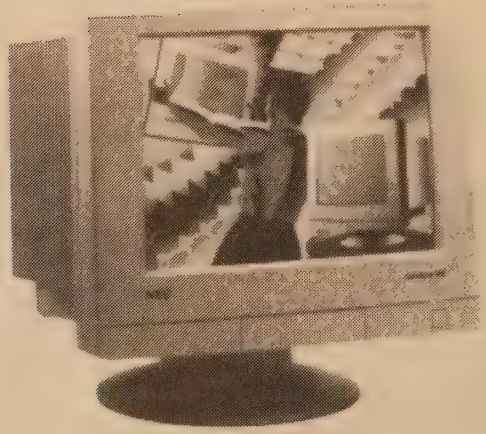

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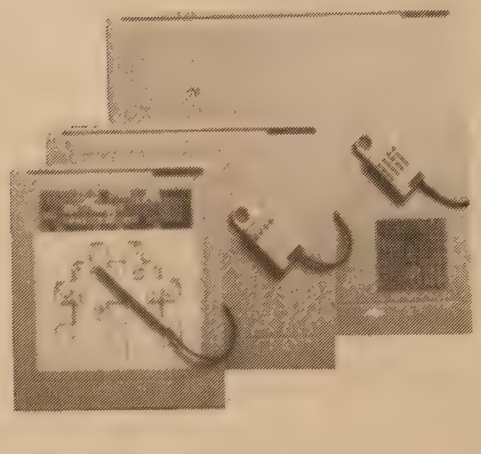

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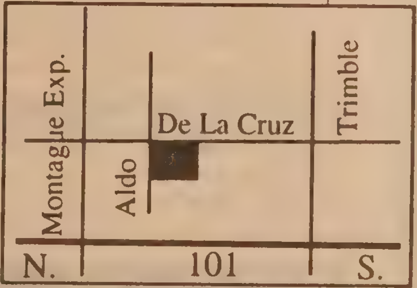

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Continued from page 124

Times-12, you must also have Times-24 or Times-48 available. Four different typefaces with the required sizes are included with the package. Additionally, unlike ProWrite or Final Copy, KindWords allows you to fully utilize the AmigaDOS 2.0 outline fonts for on-the-fly scaling!

EXCELLENCE! 3.0

This was the last of the four programs I received. After using it for a while, I was quite surprised—based on all of the advertising, you would think that ProWrite and Final Copy were the only game in town.

Not!

Excellence! has been around a long time, and this new version is the most mature of any of the four word processors. It comes with a nice, thick three-ring user manual too.

What do I like about it? Well, it's the only package among the four to include a glossary function, automatic table of contents and index generating, multiple headers and footers, footnote support, a grammar checker, a built-in macro language, and multiple bookmarks.

The glossary is basically a table of words or phrases that can be inserted into a document very quickly. For example, if "CBM" were defined as "Commodore Business Machines, Inc.," you could select "CBM" from the glossary list and insert the full text into your document. You can even assign "hot keys" to entries (e.g., Alt-L), so a simple keystroke will insert the entry. The glossary entry even saves the font, style, and ruler settings. Glossary entries can also execute a built-in macro language which can in turn run AREXX scripts.

Unique to Excellence! is its virtual memory feature. This allows you to work on a document that's larger than RAM would normally permit. It does this by automatically swapping data between your disk storage and RAM. The manual indicates that this feature permitted a 976-page document to be edited on a 2.5MB Amiga 1000 with a 20MB hard drive.

Like ProWrite, Excellence! also leaves an AppIcon on a 2.0 Workbench for graphical loading of documents.

CONCLUSIONS

It is obvious that developers of these products have looked at the mainstream PC wordprocessors—WordPerfect, Word for Windows, etc.—and tried to build some of those features into their products. I would still like to see support for tables, an automatic way to create and use preset text formats (a.k.a. styles), and some sort of minimal drawing capabilities.

Sure, none of these comes close to matching the features of Word for Windows, but they don't list for $495 either! At list prices all near $100, these word processors are absolute bargains!

If you really need full PC compatibility, you can buy an MS-DOS emulator program (one comes with the latest version of CrossDOS) and run WordPerfect 5.1. On an '030-based Amiga, you'll get tolerable speed. Commodore's A2386SX bridgeboard offers a faster, but more expensive, alternative.

I would kill for an Amiga word processor that had all of the abilities Word for Windows provides, but I really don't need all of its features. Give me a program that does half of what Word does and doesn't cost an arm and a leg, and I'll be happy as a clam! These products appear to be heading in the right direction. ■

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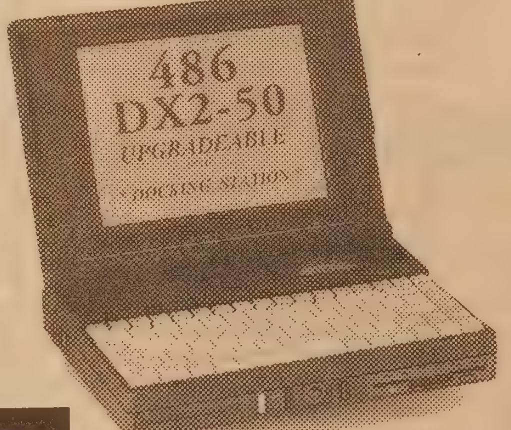

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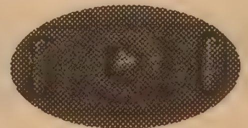

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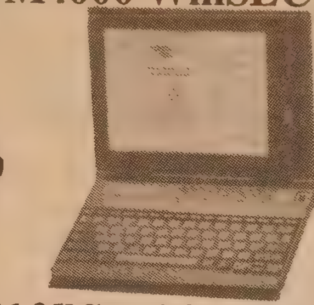

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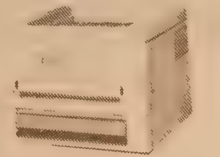

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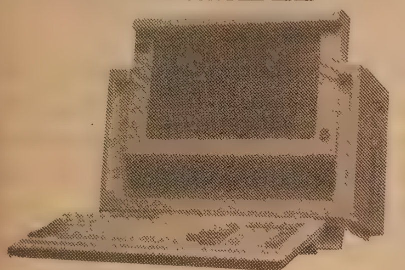

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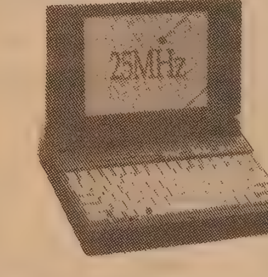

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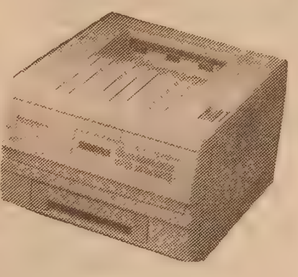

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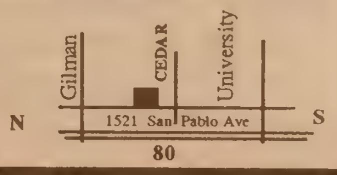

Continued from page 132

is a very fine word processor.

I found I was able to get my quotes from CompuServe in a simpler fashion in the Windows SuperApp. I did not have to open a capture file and build a script to export it because the transfer was handled by DDE. I simply captured each of my four quotes in a MicroPhone variable.

Similarly, the extensive macro I built in Quattro Pro was not necessary because I did not need to import and clean up a file of quotes. Because the four quotes were stored in variables hot-linked into Excel, Windows handled the transfer for me. Instead of a two-page macro, my final Excel spreadsheet required no macros at all.

The transfer of information from the spreadsheet to the word-processor was similarly easy. I copied sixteen cells in the Excel worksheet, and with "Paste Special" placed them into my order form in Microsoft Word.

> What I expected to be a quick evening's work turned into a two-week slog, with long searches in documentation and *for* documentation.

These processes were elegant and effective. But before you rush to build your business on DDE, listen to the rest of my experiences.

I found that each application has a quite different set of DDE commands and expressions. If you look in the Excel worksheet that is being served by MicroPhone II, you will find a link that looks like

=MicroPhone|getquote.mdc!borlquote.

The application is MicroPhone, the document is getquote.mdc, and the information you want from it is in the variable "borlquote."

An analogous link from the Excel worksheet "ddetest.xls" to Word looks like

{LINK ExcelWorksheet
C:\\WINAPPS\\EXCEL\\DDESTEST.XLS
R321 * mergeformat \r \s}

The formats are different. There is no way to predict what the DDE pasted link will look like in a different application. This means that formulas that work in one application cannot just be moved to another. I don't know why.

I also found that sometimes a paste link will simply not take. After several tries, I was unable to paste a variable from MicroPhone II into Microsoft Word. I could see no reason for the difficulty, but the "Paste Link" just did not light up on the Word menu. In order to get information from MicroPhone to Word, I had to paste a link to Excel, and then paste the information from Excel to Word. I don't know why.

Data passage from application to application is far from instantaneous. I did a test to see how long it took to pass information through my three-application chain. There were a total of twenty links: Four variables were linked from MicroPhone to Excel. Then sixteen cells were linked from Excel into a Word document. Of the sixteen cells, only four ever changed values, so only four needed updating. This makes a total of eight updates. I ran the program eight times, four times with error-generating data and four times with data that did not generate errors.

I ran the test on a 33MHz system with 4MB RAM. In addition to Microphone, Excel, and Word, I had the clock and a note program

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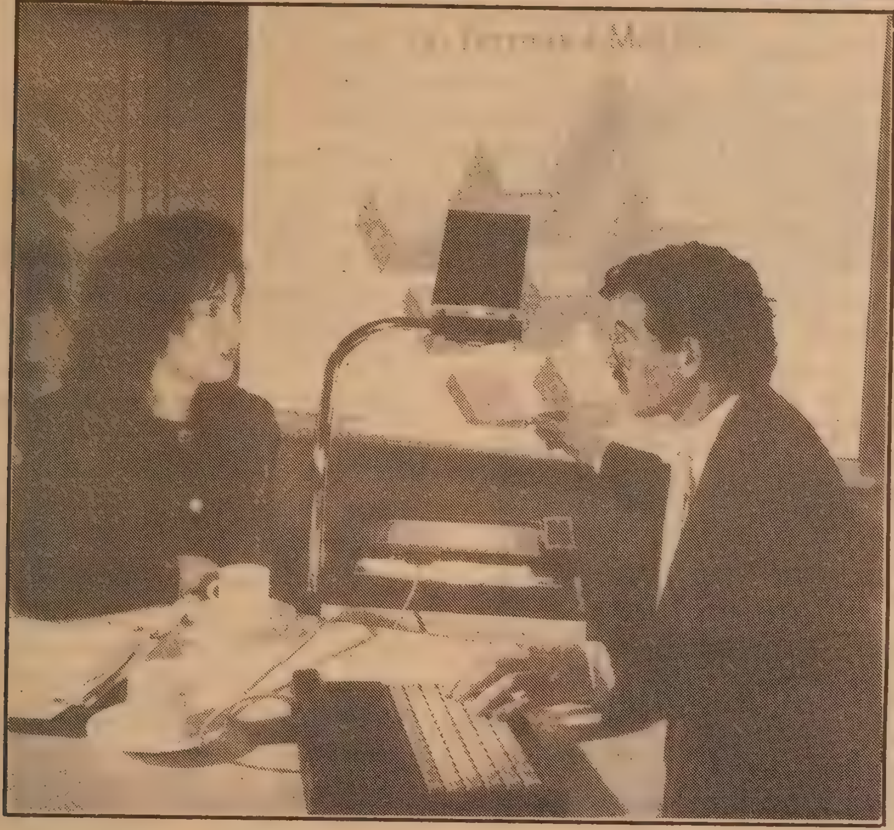

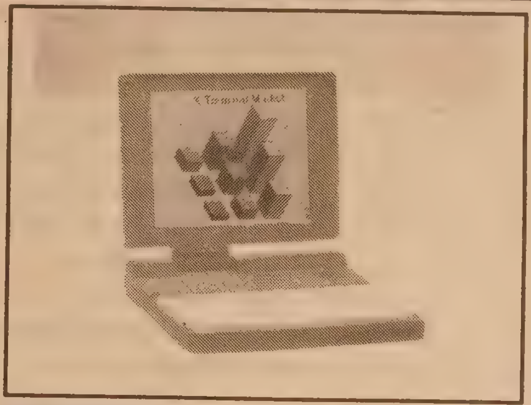

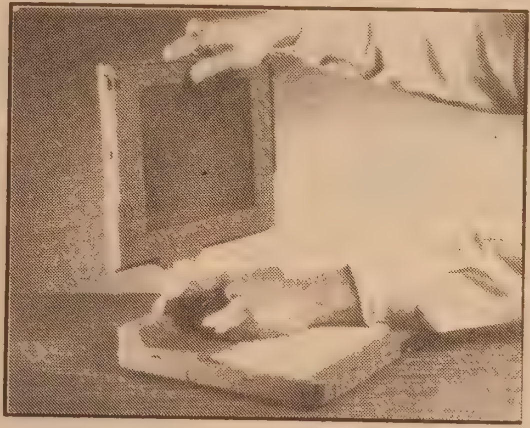

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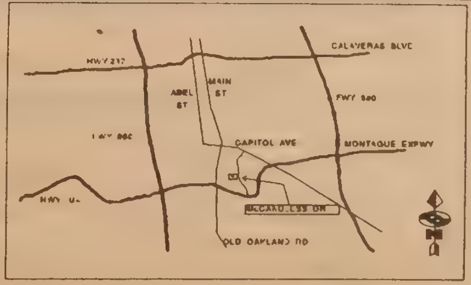

running. Here is how long it took in minutes and seconds to accomplish these updates Four variables from Microphone to Excel -> Then four cells to Microsoft Word:

Run 1: (Deliberate Error) 1:36
Run 2: (No Error) 1:13
Run 3: (Deliberate Error) :23
Run 4: (No Error) :52

The next day I did it again:

Run 5: (Deliberate Error) 1:11
Run 6: (No Error) :23
Run 7: (Deliberate Error) 1:15
Run 8: (No Error) :24

Curious, eh? But those are the times I got. The fastest update was twenty-three seconds. The slowest took over a minute and a half. Why the variation in times? I don't know. Also, Excel updated its cells up to eighteen seconds before the linked copy in Word was corrected. If you are counting on the two documents matching in real time, think again. Why? I don't know.

Although I did not formally time my DESQview SuperApp, it seemed to exchange more data much faster than did DDE.

After I accumulated quite a few DDE "I don't know"'s, I called Microsoft Help in Redmond, Washington. I asked the very courteous help-desk fellow if there was a document that explained the ins and outs of DDE and OLE for the end-user. He went off the line for a few minutes and came back to suggest that I buy Windows SDK, the software developer's kit. The average end-user would reasonably give up at this point.

Then I called Microsoft's highly competent publicity firm in Portland. Reviewers generally get better treatment than end-users, but although they offered to set me up in a conference call with the OLE/DDE developers, the publicists were also unable to provide me with an overview document. It seems fair to say that Microsoft has not provided a thorough survey of DDE for the end-user.

I finally got much of the information I needed from an excellent third-party book. SAMS publishes Ed Tiley's *Tricks of the Windows 3.1 Masters*. This thick book includes a disk with a number of freeware and shareware utilities, and it provides the best overview of DDE that I have seen so far. Armed with it, I went back in and made a number of successful corrections.

The intention of DDE was to make it possible for end-users to integrate applications. Microsoft was to provide all the tools that users needed to build working SuperApps. But what I expected to be a quick evening's work turned into a two-week slog, with long searches in documentation and *for* documentation. It resulted in a working application; but the application had puzzling unexplained behavior, and was slower than its DESQview competitor.

My chaotic experience with DDE may be typical. Slow system response, varying codes to do the same work, lack of Windows-wide documentation, and help personnel who do not know enough to help the puzzled user—all these things could make users hesitant to trust DDE in situations where the job (and maybe *their* job) depends on reliability.

My advice to someone considering using DDE in serious applications is that they go ahead and install DDE on an experimental basis, but wait before committing. As you read this article, Microsoft is releasing beta versions of "DDE: The Sequel" to developers. Hopefully the new version will be faster, more reliable, better documented, and more intelligible to end-users—and to Microsoft help personnel. If DDE technology ever matches the quality of Excel and Word for Windows, it will be unbeatable. DDE as it is now implemented is just not ready for prime time. ■

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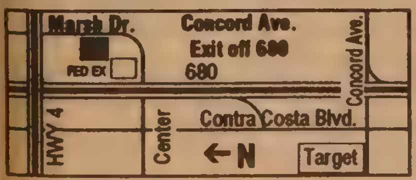

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More memory allows programmers to create bigger applications, and users to create bigger documents with more fonts, elaborate graphics with more colors, and vast databases with more errors.

Continued from page 184

the industry as I write, but no one knows how long this will continue.

If you belong to a favored group like teachers, college students, or employees of some major corporations, you may be eligible for a school or company purchase plan, with a substantial discount from list prices.

There are several distinct kinds of computer stores today.

A full-service computer store may be part of a nationwide or regional chain, or only one location; but it should carry at least a few leading brand names, have in-house capability to diagnose and fix hardware problems; it often provides some level of technical consultation and training. Excellent support is not free; it has to be built into the price structure somehow.

Neighborhood or "mom and pop" computer stores may offer only one brand of generic clones (assembled in the back of the shop), but you can expect rock-bottom prices. Small businesses live in a high-risk environment: your neighborhood store may offer excellent personal service and support, but may not be there next week. (On the other hand, some of today's most successful chains started as neighborhood stores.)

Computer superstores, such as CompUSA or Fry's, must increasingly compete with consumer electronic giants (Circuit City, Silo, etc.). The superstores offer an impressive variety of name-brand products. The big electronics stores will be offering a limited range of plug-and-play systems at deep discounts. This is all supposed to be less intimidating for first-time buyers. For support, you generally have to rely on the manufacturer's warranty and perhaps a toll-free Help line.

Mail-order computers are one of the fastest growing segments of the market, although they account for less than 10% of the computers sold today. At $2000 to $4000, a computer system is a lot bigger than the typical mail-order purchase, but companies like Dell and Gateway 2000 have built a good reputation for customer satisfaction. Even Apple, which has always resisted the idea of mail-order selling, is offering one model (the PowerBook 145) in its new catalog.

Remember that whatever you buy today will be obsolescent in two years, and hopelessly obsolete in three. This may not matter if your system is still doing what you need it to do. Some users are still working happily on a ten-year-old Apple II. But the experience of most users is that their computing needs (or desires) keep growing, often in unexpected ways, beyond the limits of their systems. ■

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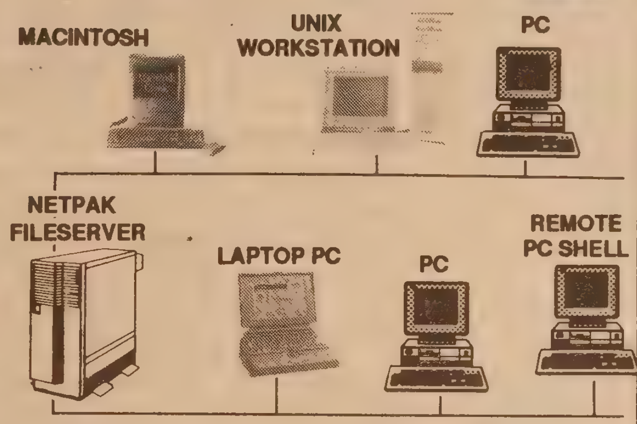

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they would show the whole abdomen, and the pancreas would be bright blue in the middle. If you click on it, you get up close and can see the different parts.

"Different kids did different things. Some came out kind of primitive. But other kids really worked hard on the drawings and modified them a bunch."

TEACHERS AND COMPUTER LITERACY

Buckelew says, "David [de Leeuw] is definitely on the enthusiastic side of the teachers. He saw the potential right away."

However, for Mac users, PCs present a strange new world. De Leeuw's computer literacy means, in practical terms, that he is skilled with Macintosh computers, has something more than simply a general understanding of how computers work, is not intimidated by the technology, and understands how computers can be used in education.

De Leeuw explains, "What this means is that when a kid comes up and says 'Something happened to my file,' I tell everyone to save, because I can predict a number of network crashes. Also I know what should be in a basic word processor. That makes me an expert among many of the teachers, and almost all of the students."

Obviously, more expertise would be desirable. "Probably to have done it [the Body Parts project] right or better," says Buckelew, "they [the school] would have given David a period off to work with the technology across the Academy. They couldn't do that.

"Several other teachers are now at the stage where they are seriously starting to use computers themselves. You either have to give somebody a year's worth of training or you have to have people who were working with computers for a few years on their own. It is much harder to make interesting computer projects happen if you don't have teachers that are basically competent with computers."

Teachers have adapted to the newer technology slower than many people expected. Students, generally, have taken to computers much more quickly. They show each other new things about the computers. On the other hand, a teacher with five classes and papers and tests does not have the time. Clearly, at places like Oakland Tech there is a need for a part-time network administrator who could assist both students and teachers. This is even more important with teachers who are less skilled and less secure around computers.

BEYOND THE ACADEMY

Another important use of the network is that a significant portion of students learn basic word processing in the computer lab. When they have a report due, they find time to come to the Health Academy and type the reports into the computer. Although it is not surprising to hear that very few students have access to a computer outside of school, some don't even have access to typewriters.

Buckelew would like to find a way to recycle older computer equipment for institutions like the school into the hands of students. Not that long ago the slide rule, calculator, or typewriter was standard equipment for most students as they entered college. Nowadays, the computer has become one of the standard items on most high school graduation gift lists.

Not all of the technology at Oakland Tech is fully utilized. For instance, there are two videodisk players with information-laden discs sitting around unused. This is because no one has the time to learn how to use it, catalog the contents on the discs, design course work around them, and convince other instructors and administrators that this is valuable and important.

The twin problem of computers and education exists for both teachers and students. On the one hand people need to simply have the time to learn how to use the tools. After that, teachers must push themselves to design curricula using computers that not only teach students particular facts, but also how to use these tools and how to solve problems.■

One of the requirements of the Partnership Academy is that each student must be assigned to an adult "mentor" upon entering the eleventh grade. The mentor offers encouragement and acts as a role model for the student. On average, mentors spend three to four hours a month with their student; students visit the mentors' work place, join mentors in attending social events, etc. For information on the mentor program, send electronic mail to les@CoCo.CA.EDU.ROP, or call Les Agnello at (510)237-8770.

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Radke basically teaches everyone the same skills. Within that structure, however, students explore computers in the direction that their initiative takes them. Radke spends most of the class time working one-on-one with students. He nudges them to answer their own questions, teaches them to teach each other, and inspires them to develop interesting projects.

When I visit, a Laotian student is working on a class assignment to draft his resume in the latest version of WordPerfect. Radke stops by to take a look at the student's work. He explains that asterisks are probably not as effective as bullets in impressing a potential employer, and shows the student how to change the asterisks. While in the menu, he also points out the Spanish dictionary. The student still speaks his native language; he and Radke talk about how to put together a Laotian dictionary, since none currently exists.

Meanwhile, Carol Cardona moves straight from showing a fellow student how to move text in WordPerfect, to logging into the KidsNet, where she downloads responses from kids around the world. She's just been in class a few weeks.

At the same time, Alexander Midence is working as a system administrator, even though this is his first time taking the computer class—"I'm beginning but I'm doing advanced work at the same time," he tells me. Alexander was recruited through the chess club where he and Radke met to work on a computer chess project. Now he spends much of his day in Computer Occupations, installing terminals to the SPARCstation, and getting rid of viruses that somebody installed with their computer games—all at the same time he's learning WordPerfect. He has recently been given superuser status, and he is appropriately awestruck about the implications of so much power. Alexander is effusive about the class, recognizing that the challenging blend of soldering wires, learning programs, and handling superuser responsibilities at once is a rare opportunity.

RESULTS

Computer Occupations does much more than train people how to use computers. It has developed a deserved reputation for creating job opportunities for its students, so much so that unemployed computer managers and CEOs are now calling Radke for job leads. Several of Radke's students are working in management positions in companies like Sony and Chiron—just a few years out of high school. Now they're serving on the advisory committee that Les has formed to keep in touch with what's going on in industry.

The class has been built with dedication, vision, sweat, creativity, connections, computer expertise, enterprise, and limited financial resources. Radke knows that he can buy Ethernet cards at the flea market for $5–$10, and one of the reasons he likes the Sun is that he can connect low-end terminals to it that are cheap, if not free—and offer each one of his students a terminal of their own to work on.

In other words, he uses the best technology at hand to get the job done. The job is not simply training students for the technological workforce they need to enter. In face of economic, educational, and social crisis, the job is to give students the tools to do so with understanding and creativity.■

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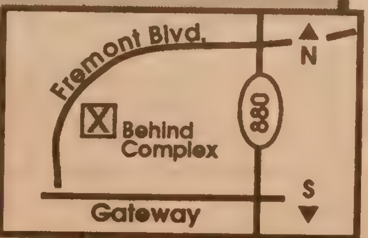

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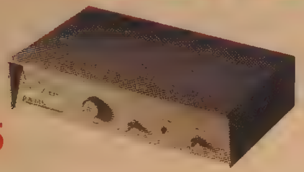

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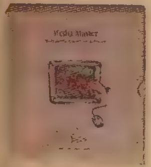
The Vinplus encoder box is the perfect VGA accessory. Its converts the signal from your VGA or SuperVGA computer display into a professional TV video signal. The VGA graphic animation and text is transferred to the VCR, TV or big screen projector in real time. The VinPlus sofware supports most of the standard VGA modes and up to Super VGA 640x480 resolution with 256 colors. The VinPlus is the perfect companion to the SuperVIA digitizer to preview live images during capture process, and to convert your presentations to video. PAL version available.

Input Signal: Analog RGB signal from VGA display adapter, or video RGB.
Output Signal: Analog signal loop thru for multisync VGA monitor supporting 15.75Khz horizontal freq., S-Video output, all necessary cables are included.
Size: 6.75W x 4.38D x 1.5H

Media Master

Authoring Software



Multimedia authoring made easy! create powerful interactive or self running multimedia applications combining text with still images, sound, animation and live video without the use of complicated programming and scripting languages. Media Master's innovative HyperButton Authoring Technology allows even novice computer users to create and distribute Royalty Free interactive applications. The total solution for educational, medical & industrial training, corporate presentations, & other A/V applications.

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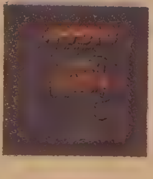
MultiMedia Studio

Presentation Software

Bring your still images (SuperVIA Capture Board), sound (Sonia Sound Board), Live video (Full Motion Video Board), and animation files (Autodesk Animator) to Life with Multimedia Studion Image Database Presentation software. Create striking and impressive multi media slide shows quickly and easily with MultiMedia Studio's built-in presentation manager. Store and manage your multi media files with its powerful integrated user-definable data- base. Great for business and corporate presentations!



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ImageQ

If you need to show true-color images for your technical seminars or client presentations, use ImageQ for Windows to communicate your visuals with the clarity they deserve. Whether it's a simple slide show or a fully interactive presentation, use the programmability and quality of ImageQ to display your 24-bit Targa, BMP and Tiff files. Visual slide sorting, on-the-fly conversion of true-color images to Super-VGA. Automatic creation of presenter notes and viewer handouts.

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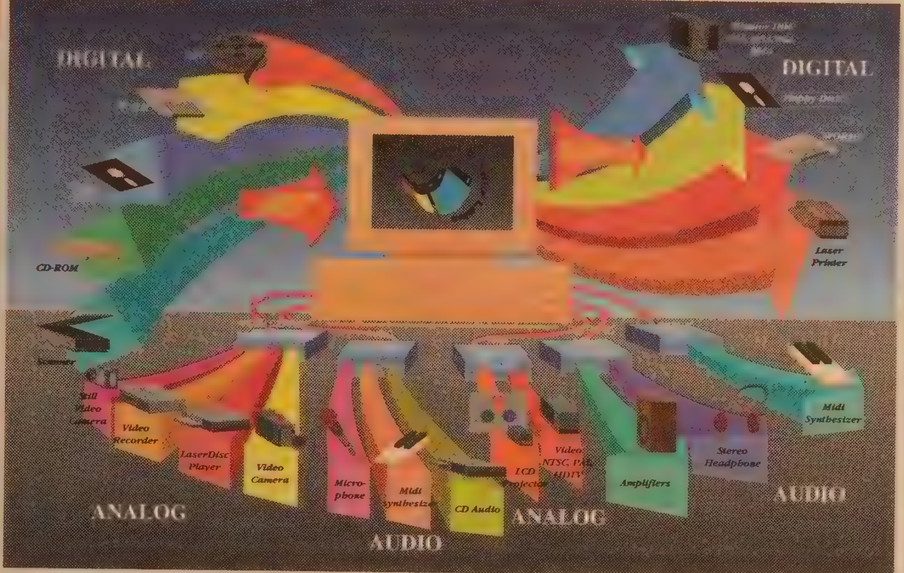
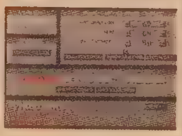


JOVIAN *MultiMedia Series*

Audio-Video Link Kit

Upgrade to a multimedia system with the Audio-Video Link kit, includes SuperVia digitiser, Gloria or Sonia stereo sound board, VinPlus video encoder, and AVL software. The AVL software provides many useful services from within several software applications, including Autodesk Animator and 3D Studio. The AVL software will pop into service by either a hot key sequence or by using a mouse from within the application software.



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Still Video Camera

Canon XAPSHOT

State-of-the-art Still Video Camera converts images to electromagnetic impulses for recording and direct display on any NTSC type TV or monitor. With the use of Video Floppies instead of film, there is no waiste, no waiting.

RC-250 $455

RC-360
RC-570 $CALL

Imaging Video Camera

JVC TK-1070U

The 1070U uses 2/3" CCD device with 768H x 492V elements; with the G stripe R/B filter, makes color reproduction extremely accurate & give a horizontal resolution of 480 lines. With one touch, it converts both RGB & Y/C separate signals for outputing. Pentax 6X Zoom lens, aperture F-1.2. Please specify Auto or Remote control options.

Auto Focus Lens included $1949

CD-ROM

The TEXEL high-performance CD-ROM drives are intended for demanding multimedia applications such as animation, graphics, 3-D modeling, and full-motion video. The Double-Speed technology motor allows a 300KB/sec data transfer rate, and an average access time of 265ms. The drives are CD-XA ready. The external drive features auto-switching power supply, both internal and external model are designed to resist environmental contamination, featuring a dust resistant door, sealed chassis, and a self-cleaning lens mechanism.
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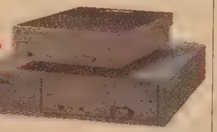

ADDA TECHNOLOGIES

AVer 2000 and Tempra Pro

$525

The AVer 2000 Video Board is a video overlay and capture board. It enables the user to connect a video source to a VGA system, displaying the live video image in the VGA screen in full screen or in a window. The live video image can be resized and relocated. Bundled with Tempra Pro and Tempra Show, the AVer 2000 Video Board is ideal for a wide range of multimedia applications.

$299 w/o Tempra Pro

AVer 1000VH VGA-TV Board

$495

The AVer 1000VH is a VGA adapter combo allowing flicker-free TV output. The board is comprised of a Tseng Labs VGA chip and a RamDAC allowing 32k color display for Windows and other applications supporting true-color display. The video output has support for composite video, S-Video and RGB.

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SONIA HI-FI AUDIO BOARD

MCI Ready

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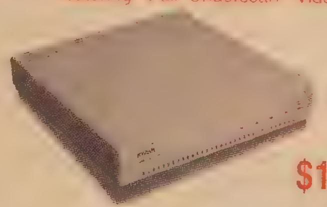
For real CD quality - at very affordable cost - The Sonia audio processor is a digital Stereo Recorder-Playback, with 4 operator FM synthesizer for ADLIB compatibility, MIDI and mixing output controls. The Sonia design is based on a 10 MIPS digital signal processor (DSP) to digitize Stereo audio at 16-Bit resolution with software selectable sampling rates of 16, 22, 32, 44.1, 48 KHz to provide audio comparable to CD-Audio and DAT. Voyetra and MCI drivers are included for midi compability under Windows 3.X

Included with the Sonia is a powerful sound editor software, a Playback and Looping synchronizer software, allowing a non-technical user to synchronise the sound with the animation sequences during play back. A powerful audio tool for creating Animations and Presentations when combined with the Supervia video digitizer.

GENIE Scan Converter

Featuring "Full Underscan" Video



$1150

The Flicker Free Genie converts standard VGA or Mac graphics from your computer to a Composite, S-Video or RGB video signal in either NTSC or PAL (optional). This allows you to record the output onto a wide range of video tape formats, or you can simply display the video output on a video projector or video monitor. The Genie is the first portable scan converter which provides Professional quality output at an affordable price. Genie requires no software or special hardware to be installed, and allows simultaneous display on your computer screen and video monitor.

State of the art anti-flicker filtering, genlock capable, freeze frame.
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Desktop Video

$1649

Digital Media Labs CG-24TC video overlay solution, bring to the desktop videomaker professional quality video titling with superb quality 32K color anti-aliased text, and video effects. The desktop video package allows crisp, anti-aliased text to be merged with generated graphics, captured images or live video, or sequence your screens with credit rolls, crawls, and variable transitions. The hardware features 24-bit capture and overlay with internal Genlock.

Targa+ Compatible

$CALL

"100% TARGA+ Clone... an excellent low cost alternative.." combined with T-Tools the power utilities for the classic TARGA users. The PowerPak performs chroma keying, video grabs, Multiple Frame Capture, Strobe EFX, Print to Laserjet, and much more. The PowerPak comes with a collection of 28 utilities and a VIGA+ 16/32 Targa compatible board. Targa+ 64 compatible and PAL version is available upon request.

Input: NTSC color composite video, analog RGB, or S-Video signal.
Output: S-Video, analog RGB, or composite video signal.

Digital Media Labs

To order, call
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[illegible]
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(Mon - Fri between 8am - 6pm
Saturday by appointment)

TERMS AND CONDITIONS
[illegible]

Continued from page 226

port (no special video adapter required). Using the supplied cable, the display may also be connected to any Macintosh model with a SCSI port, including the Macintosh Plus and Macintosh Classic. The built-in 20MHz 68000 microprocessor handles all video processing, and the on-board QuickDraw acceleration enhances overall display performance. The Mirror ViewPort also features a screen refresh rate of 72Hz, resolution of 640 x 870 pixels at 80 dpi, two SCSI ports and external SCSI address and termination switches. Front-mounted on/off switch, power indicator light and brightness control provide easy startup and display adjustments. The Mirror ViewPort is priced at $799 (direct). Mirror's ViewPort software permits the use of both screens simultaneously.

You can have the best of both worlds. You can either do all your work on the big, full-page crisp display of the ViewPort, or, for instance, use the PowerBook screen for the report you're writing while the spreadsheet or page layout application is in full up on the ViewPort.

WORKING WITH MULTIPLE MONITORS

This is hardly news—it's been there almost as long as the Mac has been around—but the Monitors Control Panel lets you specify the positions for multiple monitors. You can click and drag the larger one to either side, or on top of the smaller one, to match your set-up, or—if they are both the same size, you can give them different identification numbers.

The wonder of using two or more monitors is the way your desktop real estate expands. Move your mouse, and the cursor just glides through space and emerges in the screen of the other monitor. Tear off a tear-off menu from the application menu, and you can drag it right into the other screen. When this was first achieved by some third-party developers a few years ago, it was the wonder and envy of every other platform.

The desktop menu can be dedicated to only one screen at a time. To change that, you just click and drag the miniature menu from one rectangle on the Monitors Control Panel to the other and restart; the menu will appear on the newly-selected monitor. If you do a screen capture, it will capture the screen that hosts the desktop menu.

If you're involved in desktop publishing, multimedia, scientific applications and other complex work, and are thinking of expanding your space, a larger monitor—such as a 20"—is a good solution. But taking a clue from the professional graphics workstation world, one of the best configurations is a 13", 14" or 16" color display and a 9" or a 15" monochrome portrait display. Two screens like those may cost much less than a single high-resolution 19" or 20" display. Consider how you *really* like to work. Some people find trying to juggle all the menus and display windows on one screen makes everything too cluttered. Others find using two screens like watching a tennis match. For my work, I find that the combination of a Mirror 16" Trinitron Multiscan HG and a 15" ViewPort is just about ideal.

The Mirror ViewPort connects to a PowerBook through the SCSI port.

NOT A STANDALONE

There are some things you should know about SCSI monitors, and about dual monitor set-ups in general.

First, though it may seem a logical conclusion, since SCSI monitors have their own processor and power supply, that you can use them with a Mac, such as a IIcx or IIci, without needing a video card in the box. Wrong. Not only do you need a card, you also need another monitor for the computer. This is true of virtually all brands of SCSI monitors. They have been targeted to the PowerBook and notebook market, and the vendors didn't anticipate that they might come in very handy for users who need to substitute a monitor, for whatever reason.

A good processor is a terrible thing to waste. What would it take to enable a SCSI monitor to be able to pull a little more freight around the office? It's not a hardware problem. In the current configuration, the SCSI interface puts out a call for another monitor device, and—if it doesn't get an answer, it remains inactive. According to David Ewing, an engineer at Outbound Systems—who produce the Outrigger SCSI monitor, and OEMed the development of Mirror's ViewPort—all that's needed is a software monitor recognition emulator, sort of a patch, to "fool" the SCSI monitor into thinking there's another screen over there. However, that task is not high on anyone's list at the moment.

ANOTHER PROBLEM...

The other thing is that practically all monitor manufacturers design their displays for single-user, single-monitor installations. When you put two of the monitors cheek-to-cheek, the electromagnetic radiation from the CRTs causes the weaker one—or both—to exhibit a waterfall-like rippling distortion. They are simply not shielded for the sideways radiation that graphic workstation and video post-production ensembles generate.

The two Mirrors I use are no exception—and it would be no different if they were RasterOps, Radius, etc., or almost any other brand. In this case, the ViewPort is stronger, with its processor, so 18" is about the closest that you can have them together before the Multiscan starts rippling.

I cheated. By turning my Mac IIcx CPU box on its side between them, I formed a shielding wall that gives me less than a 9" tube-to-tube separation. Chuck Walker, a Palo Alto-based multimedia designer and producer, found that the two Apple 13" high-resolution RGB monitors driven by his Quadra can be bezel-to-bezel without any distortion. He speculates that the Sony CRTs throw most of their radiation back through the neck of the tube instead of to the sides. Ewing said that he thinks the Sonys don't radiate that much anyway. Unfortunately it won't make much difference if a monitor has the "Full Swedish" of ergonomic shielding, since it's a different level of radiation that causes the distortion.

You may also hear the urban legends that aluminum foil or cookie tins will act as shielding walls, but they won't.

SCSI monitors should be able to act as standalones, and any two monitors should be able to kiss and make up. Engineers—to your stations! ■

RESOURCES

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Basic System w/42MB HD, SVGA Card & Monitor	$644	$666	$677	$683	$733	$747	$814	$1079	$1117	$1261	$1345
Basic System w/85MB HD, SVGA Card & Monitor	$685	$706	$717	$723	$774	$788	$855	$1119	$1158	$1301	$1386
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Basic System w/4MB RAM, 130MB HD, 1.2 & 1.44MB FD, SVGA Card & Monitor	$875	$896	$907	$913	$964	$978	$1044	$1309	$1347	$1491	$1576
Basic System w/4MB RAM, 213MB HD, 1.2 & 1.44MB FD, SVGA Card & Monitor	$959	$980	$991	$997	$1047	$1062	$1128	$1393	$1431	$1575	$1660
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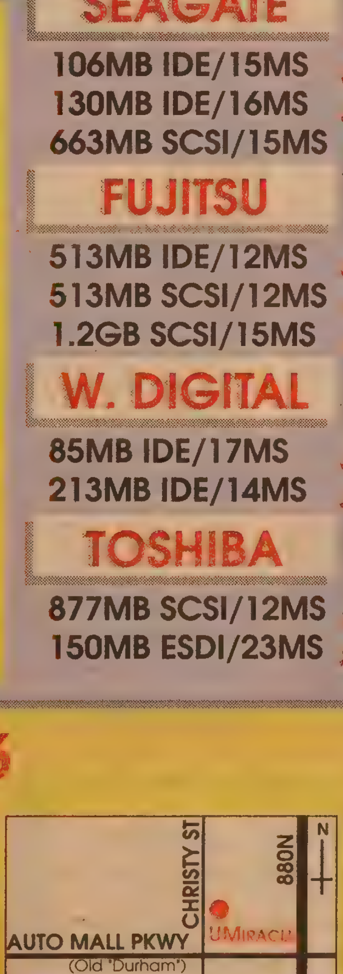

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SYSTEM	M/B + CPU	BASIC SYSTEM	BASIC SYS +40MB HDD + 12" MONO & MGP CARD	BASIC SYS + 40MB HDD + VGA CARD & MONITOR	BASIC SYS + 40MB HDD + SVGA CARD & MONITOR	BASIC SYS +80MB HDD + SVGA CARD & MONITOR	BASIC SYS +120MB HDD +SVGA CARD & MONITOR	BASIC SYS W/4MB RAM 1.2 & 1.44 FDD +130MB HDD +SVGA CARD & MONITOR	BASIC SYS W/4MB RAM 1.2 & 1.44 FDD +170MB HDD +SVGA CARD & MONITOR	BASIC SYS W/4MB RAM 1.2 & 1.44 FDD +200MB HDD +SVGA CARD & MONITOR
486DX2-66/64C EISA	878	1038	1276	1398	1428	1478	1528	1678	1718	1768
486DX-50/64C EISA	858	1018	1256	1378	1408	1458	1508	1650	1698	1748
486DX2-50/64C EISA	718	878	1116	1238	1268	1318	1368	1518	1558	1608
486DX-33/64C EISA	658	798	1036	1158	1188	1238	1288	1438	1478	1528
486DX2-66C ISA	708	868	1106	1228	1258	1308	1358	1508	1548	1598
486DX-50C ISA	674	838	1076	1198	1228	1278	1328	1478	1518	1568
486DX2-50C ISA	538	698	936	1058	1088	1138	1188	1338	1378	1428
486DX-33/64C ISA	398	524	762	884	924	974	1024	1174	1214	1264
486SX-25C ISA	214	366	604	726	756	806	856	1006	1046	1096
386DX-40/64C	166	328	566	688	718	768	818	968	1008	1058
386DX-33/64C	154	316	554	676	706	756	806	956	996	1046
386DX-25	132	294	532	654	684	734	784	934	974	1024
386SX-33	96	260	498	620	650	700	750	900	940	990
386SX-25	88	248	486	608	638	688	738	888	928	978
386SX-16	78	242	480	602	632	682	732	882	922	972
**286-20	64	220	458	580	610	660	710	860	900	950

BASIC SYSTEM CONFIGURATION:
Motherboard & CPU, 1MB (512KB for 286 systems) memory installed, 1:1 2HD/2FD controller, 1.2MB or 1.44MB Floppy Drive, Internal Clock/Calendar, Enhance Case with Power Supply, and 101-Key Enhanced Keyboard.

** Please call for 286-16 and 286-12 prices.

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12" Mono monitor w/MGP card	$88
14" Mono monitor w/MGP card	98
14" VGA Mono Monitor	108
14" VGA monitor w/16-bit VGA card	208
14" SVGA monitor with 512k card	248
VGA-256K (800•600, 16-Bit)	26
VGA-512K (1024•768, 16-Bit)	36
1M SVGA card (1024•768•256)	54
Diamond Speed Star 24X w/ Hi-Color	156
Diamond Stealth VRAM	202
Orchid IIs w/ 1MB (w/SYS)	112
Orchid IIs/Hi-Color (w/SYS)	120
Orchid Fahrenheit 16-Bit (w/SYS)	184
Orchid Fahrenheit 24-Bit (w/SYS)	196
ATI Graphic Vantage w/Mouse	204
ATI Graphic Ultra w/ Mouse	268
Nanao 9080i (16", 1280•1024, 0.28)	898
Nanao F550i (17", 1280•1024, 0.28)	1,024
Nanao F560i (17", 1280•1024, 0.26)	1,768
NEC 3FGX (15", 1024•768, 0.28)	620
NEC 4FG (15", 1024•768, 0.28)	730
MAG 15F (15", 1280•1024, 0.28)	578
MAG 17F (17", 1280•1024, 0.26)	1,118
Sony CPD 1304S	540
Sony CPD 1604S	948
HITACHI CM-2085M+ (20")	1,338
HITACHI CM-2187M (21")	2,288
TOSHIBA P17CS01 (17")	1,158
TOSHIBA P21CR00 (21")	1,798
Standard VGA (640•480) Monitor 0.51	182
Super VGA (1024•768) Monitor 0.39	212
Super VGA (1024•768) Monitor 0.28	252
Super VGA Non-Interlaced Monitor 0.28	282
Viewsoic 4 E	286
Viewsoic 5 E	386
Viewsoic 5 +	486
Viewsonic 6 E	326
Viewsonic 6 FS	586
Viewsonic 7	986
Viewsonic 8	1,516

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MFM 2FD/2HD	35
Ultrastor ESDI w/32K Cache (ISA)	154
Adaptec SCSI 1542KB w/Kit (ISA)	241
Bustek SCSI (EISA)	294
Ultrastor SCSI 24F (EISA)	440
Ultrastor ESDI 22F (EISA)	440

PRINTERS

Citizen 200GX (9-Pin)	$158
Citizen GSX-230 (24-Pin) Quiet	258
Citizen GSX-240 (24-Pin) Quiet	328
Citizen GSX-145 (24-Pin)	388
Color Option for Citizen Printer	48 / 68
Panasonic KX-P1180	158
Panasonic KX-P1123	208
Panasonic KX-P1124 i	288
Panasonic KX-P1624	364

KEYBOARDS

101 Enhanced Keyboard	$20
Maxiswitch / Keytronics	30 / 34
Focus 2001 / 9000	38 / 88
Omnikey 101	66
Omnikey 102	66
Omnikey Ultra	89

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Intel 80287-10	$44
Intel 387SX-25 / 20 / 16	88
Intel 387DX-33 / 25 /20 / 16	90
CYRIX 387DX-40 / 33	98 / 82
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200mb/16ms or 240mb/15ms (IDE)	344 / 464
200mb/16ms (SCSI)	464
340mb/15ms (IDE)	594
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Fax Modem (9600 Fax, 2400 Modem)	53
Fax Modem (9600 Fax, 9600 Modem)	198
Fax Modem (9600 Fax, 14,400 Modem)	248
3-button Mouse	13
Logitech Mouseman Serial/Bus	63/63
Colorado Tape Backup 120mb	176
Colorado Tape Backup 250mb	230
ATI Sound Card Pro	118
SONY CD-ROM CDU535 / 541	318 / 418
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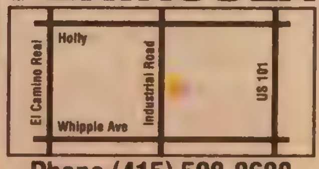

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Local Bus Display Card
Super Speed Windows!

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- 2HD/FD controller w/2S, 1P, 1G ports
- 1.2MB and 1.44MB floppy drives
- 101 Enhanced keyboard
- Built-in math coprocessor
- Weitek coprocessor socket
- Clock/calendar w/battery backup
- Vertical case with power supply
- MS DOS 5.0 & Windows 3.1
- 3 Button High-Resolution Mouse

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- Math coprocessor socket
- 1.2MB and 1.44MB floppy drive
- 2 HD/FD controller w/2S, 1P, 1G ports
- 101 Enhanced keyboard
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- 3 Button High-Resolution mouse
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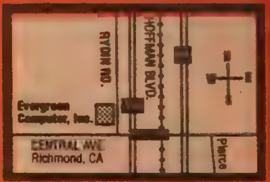

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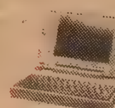

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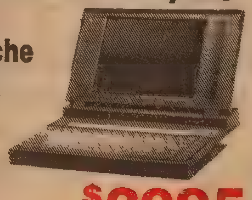
EVEREX



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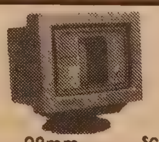
NEC



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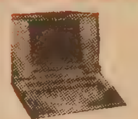

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Perfect for any Notebook or Laptop!

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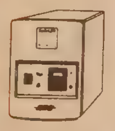
BK250B 200-200VA; back-up power for 386SX, 286SX, 286, XT's and AT's **$119**



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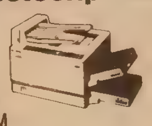

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- •39 PostScript fonts •11PPM

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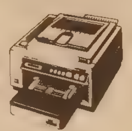
Envelope Tray	.69
Toner	39
Drum Unit	149
Developer	119

KX-P4450i $1095

KX-P4430
Laser Printer



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- •1MB RAM exp to 5MB
- •PCL-5 Scalable
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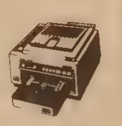
- •200 sheet paper capacity

KX-P4410
Laser Printer



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5ppm!

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- •300 dpi resolution • 5PPM

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Color Capable
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Color Capable
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Color Option.....$49

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KX-P1624	24-pin, 192cps, Wide Carriage	339
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IV, 8ppm, scalable fonts	1499
IIIP, 4ppm, scalable fonts	1055
IIID, 8ppm, dual tray, PCL-5	2289
IIISi, 17ppm, auto interface switch	3499

NEC
LC-95 Printer
$1,389

- Adobe PostScript &HP II Emulation
- 6 PPM Laser Printer
- 300 dpi
- Apple Talk, Parallel and Serial Interface
- 2MB of Memory
- 35 Scalable Typefaces, 14HP Bitmapped Fonts
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NEC P6200 **$429**
24 PIN, 300 cps, auto paper load
20k buffer, 80 columns

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Wide carriage version of P6200

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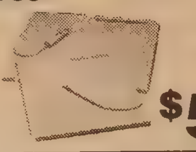

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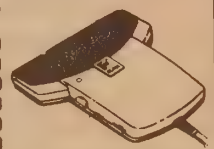

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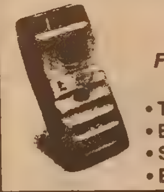

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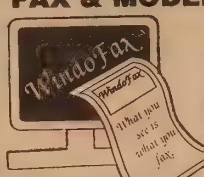
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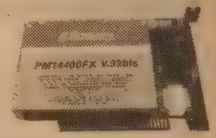

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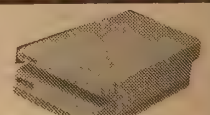

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continued from page 42

The answer lies in the current framework of state public utilities commissions, which in most places already regulate both telephone and electric services. Legislation would be needed to direct regulators to moderate cost increases for building a fiber network so as "to reflect the fact that fiber is cheaper to maintain over time than copper wires." Thus, regulators would have to adopt "life cycle cost" accounting methods, rather than conventional "initial first cost" methods.

Where does this plan lead? Well, at first it sounds a little like Ross Perot's campaign mantra: Shared Sacrifice. Authors Rivkin and Rosner admit that telephone rates would increase at first (to pay for capital outlays for fiber), but energy rates would drop. As other major users of the fiber network come online, "residential phone rates could be expected to fall as well," Rosner says.

Using state regulators is "one of the virtues" lurking in between the lines of the policy, Rivkin say, "because the policy doesn't require substantial amendments to the Communications Act of 1934." The policy plan calls for energy utilities to become "anchor tenants in tomorrow's information mall, much as major retail chains commit to become anchor tenants in a new shopping mall."

But local telephone and utility companies have had a stormy relationship in past. The authors ask: "Can these regulated behemoths work out? We believe so, if new legislation provides clear direction and guidance for state regulators to draw telephone and energy companies together, despite their differences."

The authors are staunchly against the telcos being given programming rights for video services if they own the fiber network; however, if an energy utility actually did own its own fiber network and merely leased out capacity to the local telephone company—thus making the telco "an anchor tenant"—Rivkin and Rosner see "no reason to prohibit [telcos] from participating in the video programming market."

Telephone companies, in general, have been quiet about the study, which was quietly circulated among all RHCs at the beginning of August. No one was ready to comment on the study's viability; BellSouth was a vocal exception.

BellSouth sharply criticized the plan: "This shortcut sounds more like a long side trip to a dead end for the American consumer." The company wondered how "a shotgun marriage between the telephone companies and the electric utilities could serve American consumers." The study is "at best...a half-cocked exercise by ivory tower lawyers who don't understand the telecommunications industry or telecommunications regulation...by recommending outdated regulatory schemes."

The meat of the plan is its call for a legislative approach that would mandate the setting of a national goal to quickly create a universal public network and for giving state regulators the tools and flexibility to work toward the goal. This call for legislation is certain to send Republicans running to the Congressional floor "yelling about short-sighted industrial policy," says one Clinton aide. The legislation probably won't come "any time soon," the aide says. "However, it does have some important economic ramifications, and the economy is our first priority."

Vice President-elect Al Gore may get the green light to work his old Senatorial stomping grounds to drum up a sponsor for such legislation, a Clinton aide says. The proposed law would make the new network a common carrier and would bar owners from holding any interest in firms that plug into it. ■

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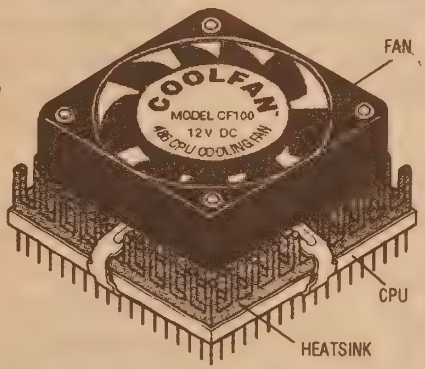

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Continued from page 64

izer also tracks layers of identical securities purchased at different prices, letting you identify which shares to sell for the best tax position.

The portfolio management capabilities in The Equalizer are impressive. For example, the system matches sell transactions with previously entered buy transactions, and buy-to-cover transactions with previous sell short transactions. Using the extended quotes function, you can price bonds that have no symbol and are not tracked by Dow Jones. This latter feature is especially useful for year-end tax planning, in case you wish to take gains or losses on securities that are less active.

Programs like these are not a substitute for an understanding of the relevant tax laws, however. A case in point involves the wash sale rules, which dictate that if you sell stock at a loss, you cannot deduct that loss if you reacquire a similar position within 30 days. Similarly, special rules apply to "tax straddles," where an investment position is hedged.

1040 PREPARATION SOFTWARE

A variety of tax preparation programs is available for non-technically trained users, and many are quite inexpensive. Some of my clients use them to assist in tax organizing and planning. An example of their many uses includes computing estimated tax payments. Some taxpayers can benefit by making an estimated tax payment to the State on December 31 in order to accelerate the 1040 Schedule A deduction for state income taxes.

Another example is estimating the maximum allowable contribution to a retirement plan. Often, the taxpayer needs to meet a deadline for a plan contribution well before his or her tax return can be prepared and filed.

A mock-up of your return created with these tax preparation packages is also useful in computing the effect of Uncle Sam's limitations on the percentage of certain itemized deductions. For instance, miscellaneous employee business expenses are allowed only to the extent that they exceed 2% of Adjusted Gross Income (AGI)—that magic number on the bottom line of Form 1040. Medical expenses and casualty losses are also subject to percentage limitations.

It may even be possible to structure an early distribution from a qualified retirement plan or an IRA without incurring the 10% excise tax. Under one exception, for example, the amount of the distribution subject to the excise tax is reduced by deductible medical expenses. Your computer can tell you how much you've spent, right down to prescription drugs and eye glasses.

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By integrating your personal accounting program with one that calculates income taxes, you can quickly decide whether to pay a business-related expense this year or next, whether it may be advantageous to prepay or defer payments on medical insurance, or if all else fails, the best year to be burglarized.

It is equally important to know what not to use this software for. These simplified tax preparation packages are not a substitute for professional advice. A short visit to any law library reveals that one of the largest sections is that covering federal taxation. Pick out a volume and read a few paragraphs of the stuff. The seemingly perverse complexity of the tax laws has been the subject of rebuke from commentators ranging from Supreme Court Justice William O. Douglas to Ann Landers. To rely on consumer tax software to interpret all this to your best advantage is to entrust the family jewels to some faceless accounting nerd—the disclaimer on the package will warn you of as much.

Professional tax preparation software used by your practitioner may take massive amounts of hard disk space, rely on online processing, and cost thousands of dollars per year. The products you can pick up on a single floppy at the local computer store or download from a bulletin board, while useful for making many estimates, have severe limitations. This is why I refer to the output of such packages as "draft" returns, even though the format of many are accepted by the IRS for filing purposes.

While personal tax preparation software has its place, and certainly can expedite tax planning, it is important not to be lulled into the apparent ease of their fill-in-the-blanks format.

It is equally important to know what not to use this software for. The seemingly perverse complexity of the tax laws has been the subject of rebuke from commentators ranging from Supreme Court Justice William O. Douglas to Ann Landers. To rely on consumer tax software to interpret all this to your best advantage is to entrust the family jewels to some faceless accounting nerd.

OPERATING INCOME AND EXPENSES

If you own real property used in a trade or business or held for investment purposes, and if your accounting system is doing what it ought to, you should be able to readily generate a statement showing income and operating expenses. When making an estimate for tax planning purposes you'll need to adjust the expenses to include depreciation and other items.

Most accounting software—personal or business—can track the activity of each property separately, either by setting up each property as a separate department, or by treating each as a separate project. When the end of the year rolls around, you'll want that information.

Losses from passive activities like rentals are usually not deductible from other types of income (e.g., wages or interest). But under a limited exception, up to $25,000 of rental losses may be claimed, subject to a phase-out as income increases. You'll therefore need to be able to compute both your rental losses and your income in planning to use this exception.

Special rules involving characterization of transactions, limitations on various classes of deductions, percentage limits based upon AGI, and netting rules practically mandate using a computer to do tax planning, especially at year-end. Without the ability to readily aggregate transactions, the clerical burden could be unwieldy.

The following example illustrates the importance of using a computer to do "what-iffing" where personal and business tax planning overlap:

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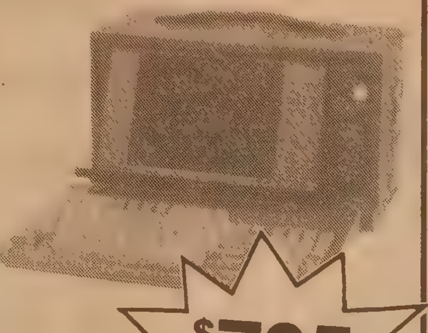

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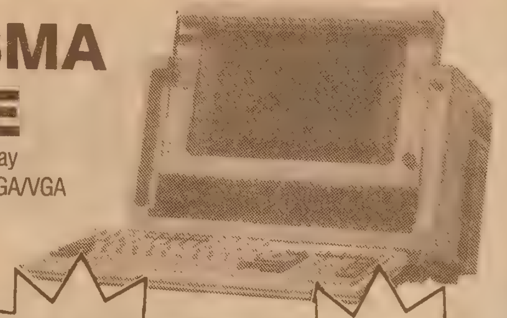

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A variety of tax preparation programs is available for non-technically trained users, and many are quite inexpensive.

her credit card would give her no deductibility. Borrowing against her stock portfolio, she could deduct margin interest to the extent that her investment income exceeded investment expense. Lisa could refinance her rental house in Fresno, subjecting the interest to the passive activity loss rules. If her company took out a line of credit at the local bank, it would not only reduce her business income taxes, but may also reduce her employment taxes as a self-employed individual.

THERE'S ALWAYS MORE MEGILLAH

Nowadays, individuals are potentially faced with two concurrently running income tax systems: the regular ol' income tax, and the Alternative Minimum Tax (AMT). Most individuals manage to avoid the AMT because it is structured to kick in only at higher income levels and applies to more complicated types of transactions. There's also a corporate AMT that applies more frequently.

If you might be subject to the AMT, it is important to prepare tax projections under both the regular tax rules and the AMT rules. These rules are too complex to discuss here, but are mentioned as a reminder that low-end tax prep software may not "know" when to signal you to try another route.

That doesn't mean your company should run out and hire a consultant to purchase corporate tax software. (Refer to my articles on how to select accounting software in the July 6 and August 3, 1992, *MicroTimes*, or call me at 510/893-5753 for copies.) Most of the high-end accounting software packages used by small- to medium-sized businesses can be set up to provide quick access to the relevant information for your accountant at tax planning time.

Every time the tax law can of worms is opened for "simplification" and updating, the new loopholes, incentives, and legislative compromises will likely offer more opportunities for tax savings—but you can bet they won't get any easier to calculate in advance. ■

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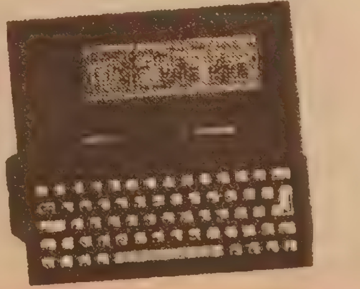

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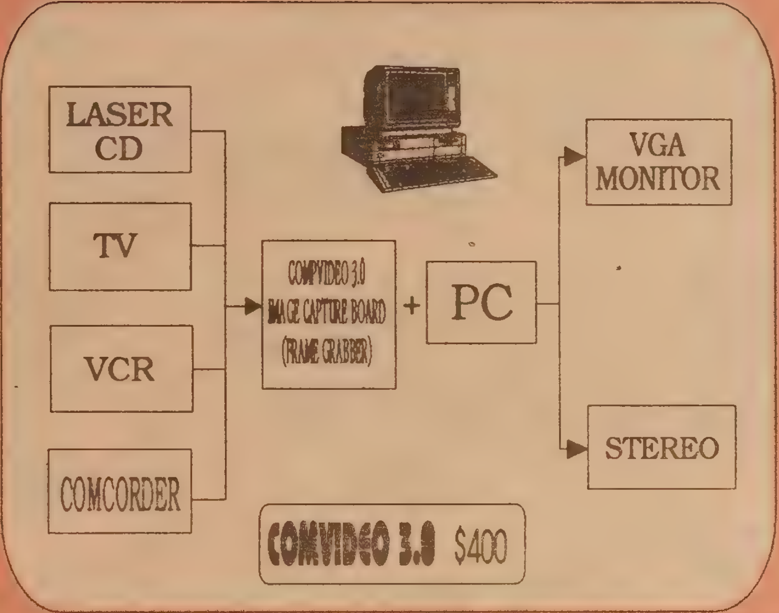

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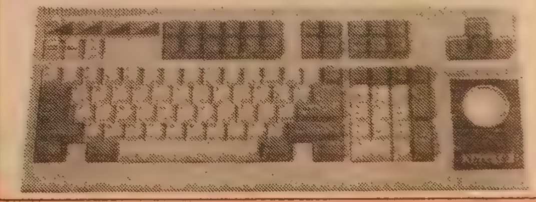

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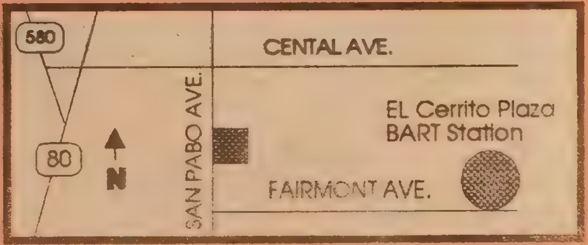

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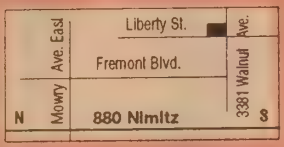

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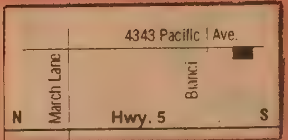

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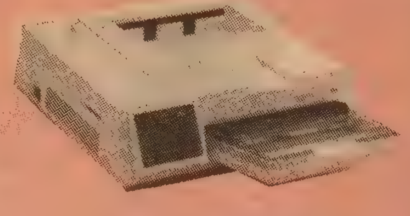

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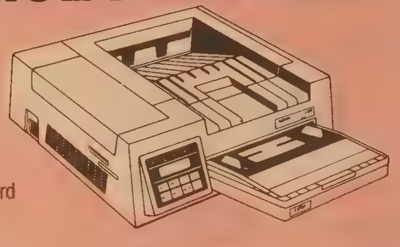

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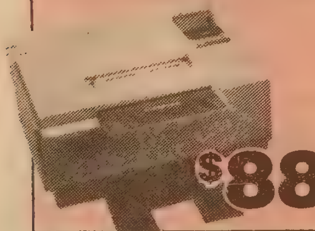

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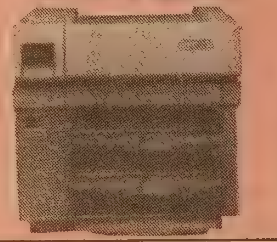

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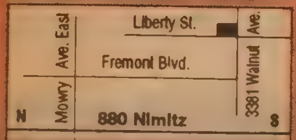

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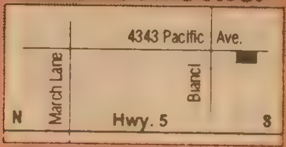

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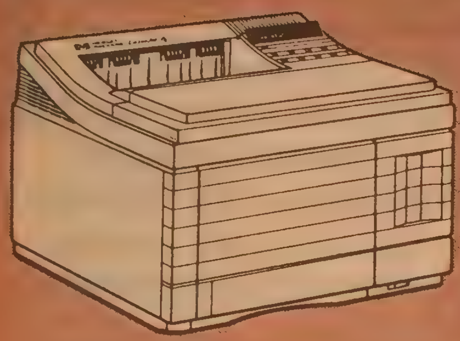

HP LaserJet 4M printer with envelope feeder and lower paper tray

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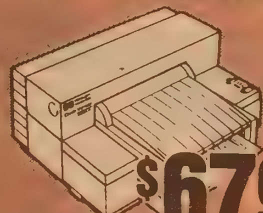

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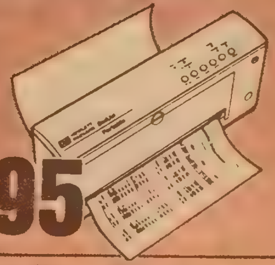

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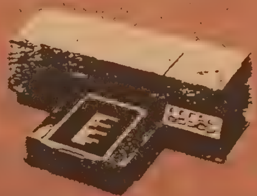

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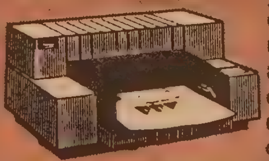

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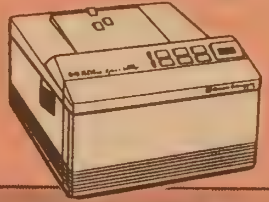

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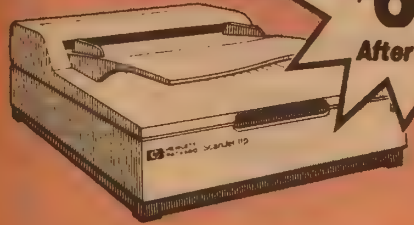

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MAC Version
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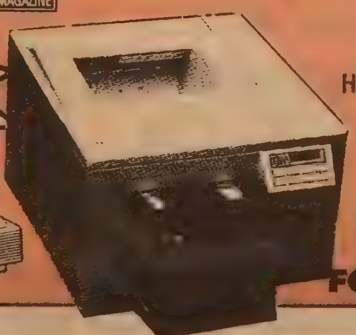

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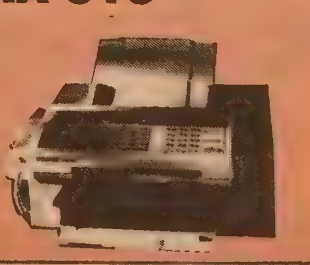

continued from page 52

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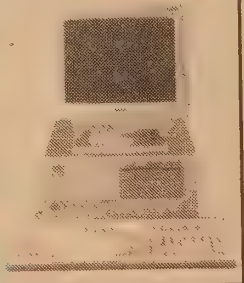

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Continued from page 80

more adapter development. For example, vice president of marketing Barry George says D-Link came out with its PCMCIA entries when his research "disclosed that many portable motherboard subcontractors are working on designs including PCMCIA for 1993 release." Many other hardware developers have gotten the same message.

Megahertz, for one, is nearly ready with its PCMCIA Notebook Fax/Modems: the 2400/9600 model CC324FM ($429) and the 14400/14400 model CC3144 ($699). Unlike some other solutions, the Megahertz modems are fully contained within Type II size constraints.

Others, like Intel, put their modem's line interface components (the data access arrangement or DAA) in an external module as network-card vendors have done with their transceivers. Intel's 2400bps Modem Card, like the company's PCMCIA Flash Cards, is an OEM product aimed at the early market (in which buyers tend to get their enhancements from their system's vendor).

Prima International is developing an IDE adapter which will ship Q1. Other vendors are reportedly working on SCSI PC Cards.

OKI Semiconductor Group not only has a new line of 2-, 4-, and 8-MB D-RAM memory cards and a 10MB solid-state disk (SSD) drive for COMDEX, the company plans to begin distribution with an "OKI on Board" promotion reminiscent of Intel's processor slogan. OKI will release cards with microprocessors and communications functions as well. SSDs are also available from other vendors, typically in Type III (10.5- millimeter) packaging.

PCMCIA 2.0 is the latest stage in a progression of credit card devices (2.01 is a maintenance release), and it promises to solve problems that have plagued developers, and made interoperability a problem, as recently as Q3 of this year. Megahertz Corp., for instance, has had its efforts to ship a fax-modem PC Card thwarted by the variety of solutions BIOS writers have used to connect PCMCIA to system hardware. Bob Ycmat, senior product manager at Megahertz says, "There's maybe nine BIOS companies that we have to go to. One of them may provide system software for three computers, another for five, another for two more, and so forth. That means our PCMCIA card won't be universal, and it slows down development because it's supposed to be universal." Until now, in the words of Ycmat, PCMCIA has "left too much latitude as to how the card was going to be addressed."

Version 2.0, however, provides a protocol that McGuire promises will eliminate this difficulty. "The problem comes from independent drivers that bypass the Services set up to insure compatibility," says McGuire. However, he adds that "Vendors within PCMCIA have been aware of, and implementing, the new standards of Card Services and Socket Services." Fortunately, many of the machines built today have the ability to upload their BIOS into flash memory, and according to McGuire, "Most PCMCIA-member manufacturers, who haven't already done so, anticipate an option of upgrading their host software to Card Services and Socket Services 2.0 in the near future." That should eliminate the last bottleneck to the acceptance of PCMCIA as a standard.

Next month I'll look at how PCMCIA 2.0 dealt with development problems, and at how it will have a broader impact when it hits network workstations and, eventually, ordinary desktop PCs. ■

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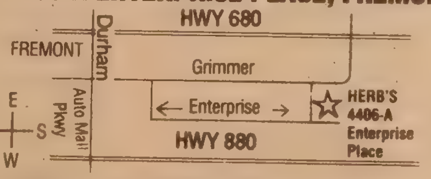

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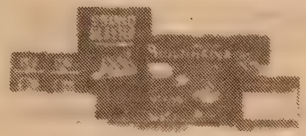

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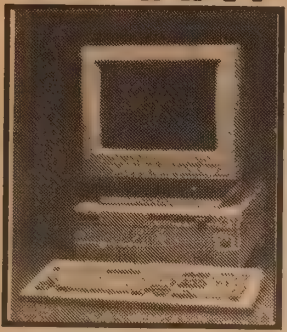

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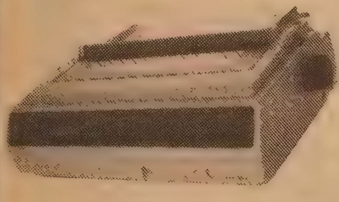

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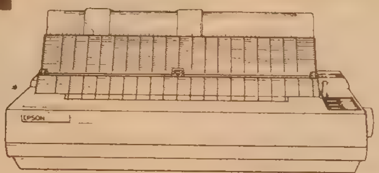

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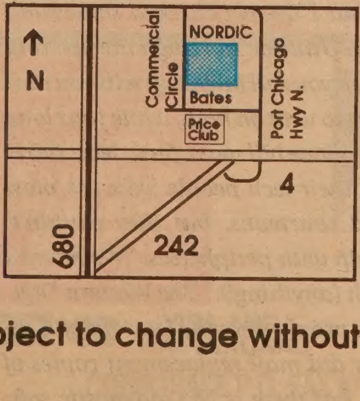

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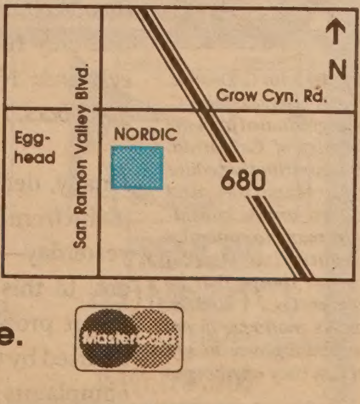

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The Public Writes A Dvorak Column

Or What Else Is New?

BY JOHN C. DVORAK

DVORAK'S LAST COLUMN

It's time to empty out the mailbox with some of the observations, complaints, compliments, and tirades that show up on the computer desktop in the form of email.

Last year at COMDEX I hosted a speed typing contest organized by Keytronic. An irate user, Richard Danca, who apparently purchased a defective keyboard, wrote this cute letter which was so funny that I have to reprint it.

TO: John C. Dvora
Subject: eytronic eyboards
Dear Mr. Dvora:

I would have written to you sooner about your pending venture with eytronic Corp., but I had a little problem with my eytronic eyboard. You see the on this eyboard (that is, the letter that falls between J and L) just up and quit woring. As you certainly now, that letter appears in your last name, so I was unable to send this to you by MCI Mail.

It's funny: you never thin about how often you need to use the letter until it stops woring on your eyboard. For example, I just wrote an article about noteboo computers in which I mentioned Eastman oda's Diconix printer. I recently wrote a piece about John nuppe. And of course, I wor for Federal Computer Wee. Lucily, I wor in Washington, not New Yor. Yes, I finally am going to buy a new eyboard.

So, as to the typing contest you're getting involved with, I hope it will involve text that uses only 100 of the 101 eys on those eytronic eyboards. No more Quic brown fox or lazy dog's bacs, I guess.

Finally, deep in the basket I found a complaint from 1990! It sounds like it was written yesterday—only the vendors might be different. In this note Richard Stalls complains about problems with Windows 3.0. I was amused by this since it sounds like the same complaints heard about OS/2 in some quarters. History sure does like to repeat.

It is out of sheer frustration that I write to you about a recent unpleasantness and share it only because I wouldn't be surprised to find that I'm only one of (maybe) hundreds in the same boat.

I've recently decided to upgrade to Microsoft Windows 3 and in the process have installed a 2 meg extended memory card, a Paradise VGA1024 w/512K, and a Panasonic C1381 monitor. I have also upgraded my PC Tools to version 6 and am running IBM's PC-DOS 4.0. I have a 1985 vintage Sperry (Mitsubishi) 286 machine with the latest available BIOS, running at 7.16 MHz, no wait states.

It probably goes without saying that the individual installation processes have reconfigured and reconfigured the CONFIG.SYS and AUTOEXEC.BAT files willy-nilly; and, depending on what has done what to what, I have experienced any number of changing incompatibilities, including the Paradise RAMBIOS.SYS deciding all of a sudden, with no apparent reason, to simply lock up the machine, and Windows 3 just as suddenly deciding that the screen display should be somehow different and that my 80286 is something lesser. I have spent what must have been hours on the telephone, mostly on hold, getting everything from "Gee, I dunno..." and "I never heard that before..." to outright hostility when I made the faux pas of telling a PC Tools guy that I double checked something using Norton Utilities. Although the opening message when you call Microsoft tells you that you will have to wait on hold, while your long distance telephone bill soars, for at least thirty (!) minutes, their tech people were the most patient and courteous, but they couldn't/wouldn't help with peripherals; "We haven't tested it with (anything!)." The Western Digital/Paradise people were the least helpful although they did mail replacement copies of the drivers, but there is NO diagnostic software, so I have no idea whether the damn VGA1024 card has a defect or it just isn't behaving as it should in concert with the rest of my goodies.

In all fairness, I'm certain that the tech support people get lots of stupid questions all day and they lose their patience at times, but if these hard/software producers would talk to each other more and would provide adequate documentation and diagnostic software with their products, then maybe they wouldn't need to confront so much banality.

Incidentally, I THINK that I have things working to an acceptable level now although I have no idea how to make the Paradise card function PROPERLY when configured with their driver software; and nobody seems to have any earthly idea what I'm describing when I tell them about the little vertical lines that appear across the bottom quarter of the screen when Windows first comes up and then seem to be uncovered from underneath by the mouse pointer's track. It's frustrating as hell to have the vendor's "experts" come up with "Duhhhhh..... I never heard of THAT before...." I'll just live with 800 x 600 although I paid for more. Such is life I suppose.

> **"I wor for Federal Computer Wee. Lucily, I wor in Washington, not New Yor. Yes, I finally am going to buy a new eyboard."**

Such is life indeed. An old tirade that has a ring of today. ■

© 1992 by John C. Dvorak. All rights reserved. John C. Dvorak graduated from the University of California. He is a contributing editor of PC Magazine *and* MacUser, *and is considered by many to epitomize the contrarian view of things—a charge that he vehemently denies. Dvorak's motto is: If you have nothing nice to say, then don't say anything at all.*

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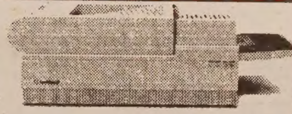

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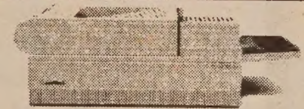

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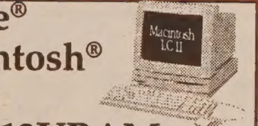
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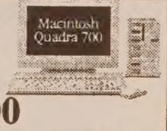
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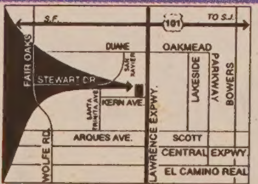
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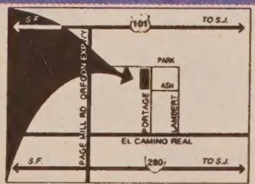
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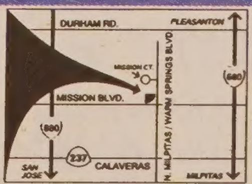
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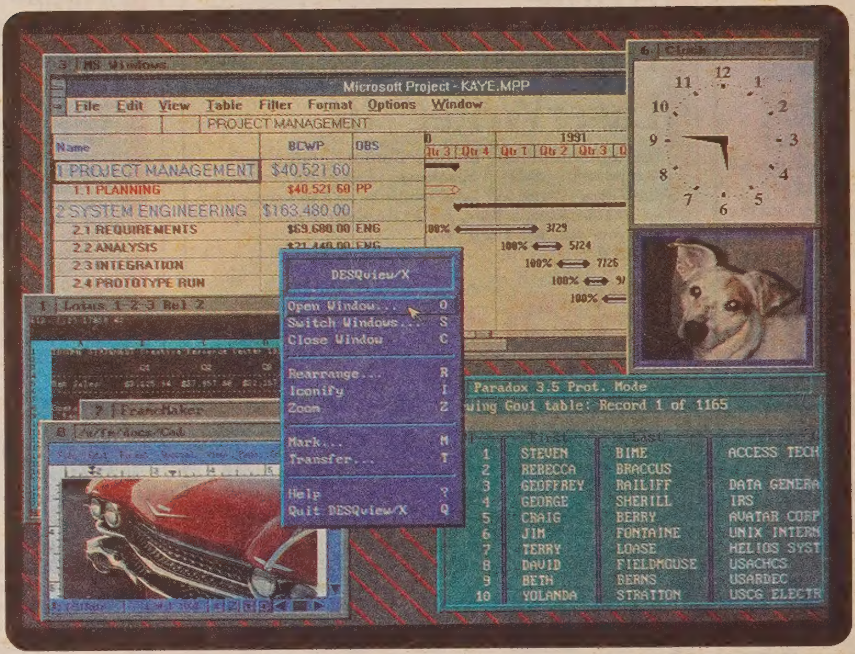

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